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A Clinical Lecture

ON

TWO HUNDRED CONSECUTIVE HYSTERECTOMIES FOR FIBROIDS ATTENDED WITH RECOVERY.

DELIVERED AT THE MIDDLESEX HOSPITAL ON JULY 4TH, 1916.

BY

SIR JOHN BLAND-SUTTON, F.R.C.S.,

SURGEON TO THE HOSPITAL.

UTERINE fibroids are common tumours; so common and troublesome that I have removed the uterus for this disease in more than 2,000 women. I will show a few uncommon examples, and epitomize my experience. I prefer the name fibroids for these tumours, using it in a generic sense. No one doubts that in the beginning uterine fibroids consist almost entirely of unstriped muscle; some retain this kind of tissue throughout life, but the majority undergo great changes. Some fibroids are indistinguishable, even with the aid of a microscope, from the common species of sarcoma; and a few contain transversely striated spindles, like young striped muscle cells. These myosarcomas, though rare, are intensely malignant. Some innocent fibroids are soft, gelatinous, and as structureless as the jelly of the umbilical cord.

Much of the uncertainty that often besets the diagnosis of pelvic tumours depends on the tissue changes so liable to occur in fibroids, whereby some are transformed from lumps as hard as gristle into stuff as soft as jelly, and others into stone. These remarkable changes are the consequence of the exiguousness of the blood supply and the peculiar nature of the organ in which fibroids grow. Indeed, the natural history of such tumours is that of the uterus, and the fate of a fibroid depends on its position in the uterus. Observation teaches that the conduct of subserous fibroids differs from those that are submucous; and a fibroid in the cervix runs a different course from one growing in the body of the uterus.

SUBSEROUS FIBROIDS.

The fate of a subserous fibroid is intimately bound up with the age changes of the uterus.

Until the girl becomes pubic the uterus is functionless, and after the establishment of menstruation it increases in size and remains very vascular for thirty years. After the menopause the function of the uterus ceases, the blood supply declines, the coats of its arteries thicken, and the vessels become impervious, like the obliterated hypogastric arteries after the detachment of the placenta. This local arterial change is associated with the atrophy of the uterus. If the uterus contains fibroids, they shrink, atrophy, mummify, or calcify. A mummified submucous or an intramural fibroid is tough, structureless, and resembles chamois leather.

The influence of interference in the blood supply on the texture of fibroids may be easily studied in subserous tumours with narrow stalks. A fibroid the size of a ripe plum with a narrow stalk may be as mobile as a cherry on a tree. If the stalk be tightly twisted by the movement of the tumour the blood supply is arrested, the fibroid dies, and sometimes drops from the uterus into the pelvis. Small detached dead fibroids are not novelties in the dead-house. Subserous fibroids sometimes become big tumours. A solitary subserous fibroid does not cause enlargement of the uterus. I have removed a tumour weighing 36 lb., attached by a pedicle 3 cm. in diameter to a uterus of normal size. A flexible stalk confers great mobility on a big tumour, and the blood vessels supplying it pass through this narrow isthmus; on section it often resembles a cavernous naevus. (Fig. 1.) When the tumour twists, or drags its pedicle, the circulation of blood through it is stopped. Partial twists hinder the escape of venous blood and the tumour becomes engorged. Complete twists obstruct the arteries and the fibroid becomes ischaemic from deprivation of arterial blood; this leads to degenerative change. Big subserous tumours are often converted into sacs filled with gelatinous material. Circulatory disturbances in the tumour lead to adhesions between the periphery of the tumour and adjacent intestines and omentum; or the gall bladder, liver, and stomach, when it reaches into the epigastrium. Large stalked fibroids attached to the fundus of the uterus do not hinder conception nor obstruct delivery. A fibroid with a long stalk attached to the back of the uterus may slip into the pelvis and become incarcerated. If under such conditions the uterus becomes gravid, a fibroid of this kind will seriously obstruct delivery. Although, as a rule, a sessile subserous fibroid neither hinders pregnancy nor obstructs delivery, the latter is inimical to the fibroid. It is established that the diminution in size of the uterus and the movement of this organ as it sinks into the pelvis after extrusion of the fetus, imparts a rotatory motion to an ovarian tumour when it complicates pregnancy. A similar motion can be imparted to a stalked subserous fibroid under like conditions. A sessile subserous fibroid, especially a fundal fibroid, will be involved in the septic process when the endometrium becomes infected in the course of delivery. This will lead to serious changes and subsequent complications imperilling life.

FIG. 1.—Subserous fibroid and uterus in section, to show the vascularity of the pedicle. The tumour weighed 6 lb. The uterus is of normal size. Removed from a spinster aged 40.

SUBMUCOUS FIBROIDS.

The changes in submucous fibroids are chiefly influenced by the functions of the uterus; indeed, the natural history of these tumours is like that of a uterine pregnancy, and these two conditions sometimes simulate each other so closely as to make clinical differentiation difficult.

A submucous fibroid grows insidiously: its presence is often unsuspected until the slowly, but persistently, enlarging uterus rises high in the hypogastrium and attention is attracted to the abnormal size of the belly. The contour of the uterus may be uniform and smooth; often a murmur is audible on auscultation. On several occasions I have removed a uterus containing a large soft subserous fibroid, and placed it before my assistants to

decide, from physical signs, whether the uterus was gravid or occupied by a fibroid. They found difficulty in making a choice.

A large submucous fibroid, like pregnancy, leads to an enormous increase in size of the veins and lymph vessels of the pampiniform plexus. In some cases there is a large corpus luteum, and, rarely, mucoid fluid can be squeezed from the nipples. If the fibroid be enucleated, the uterine tissue will contract as rapidly as after the expulsion of a fetus, although the fibroid may have occupied the uterus many years. In some cases the correspondence to pregnancy is further exemplified when the uterus succeeds in expelling the fibroid into the vagina; this act is accompanied by the pains of labour and free bleeding. Such an event has been mistaken for a miscarriage, the extruded fibroid for the head of the fetus, and forceps have been applied to facilitate its delivery! The result to the mother was disastrous. The likeness to delivery, or miscarriage, is more marked with a submucous fibroid softened by red degeneration. Sometimes softened tissue is discharged in shreds. These red shreds have been mistaken for retained secundines before, and since, practitioners of midwifery became familiar with red degeneration. The common colour of a uterine fibroid is white or pale yellow; when a uterus containing a submucous or an intramural fibroid becomes gravid the tissue of the fibroid reddens in streaks and softens. As the pregnancy advances the tumour assumes the colour of beefsteak, and the fibroid sometimes liquefies and becomes a cyst filled with chocolate-coloured fluid, the capsule forming the cyst wall. This change is not due to bacterial action nor thrombosis. Micro-organisms are occasionally found in these disorganized fibroids; their presence is an epiphenomenon—a sequence not a cause. This metamorphosis of fibroids is described as autolysis, and is probably a local exaggeration of the process that leads to involution of the puerperal uterus. The unpleasant odour emitted by red fibroids is due to amines produced by decomposition of the muscle tissue. Autolysis is the term applied to the transformation of insoluble tissue into soluble nitrogenous extractives. The change occurs without the aid of bacteria. Red fibroids occur in spinsters near the menopause, but are more common in pregnant women.

When the uterus persistently endeavours to extrude a submucous fibroid, the unavailing labour leads to the dilatation of the cervical canal; this facilitates the ingress of pathogenic bacteria. Hence chronic salpingitis and hydrosalpinx are common associations of submucous fibroids. These complications are due to the same cause as tubal and pelvic infections ensuing on miscarriage, labour at term, or curetting, and run like courses, with similar endings. Infection of a partially extruded fibroid is due to the same cause, and runs the same course as puerperal sepsis.

Cervical Fibroids.

A large fibroid in the neck of the uterus is an insidious tumour, especially in spinsters. Its natural history corresponds to the part of the uterus in which it grows. The cervical endometrium takes no part in the menstrual process; therefore a large tumour growing in the neck of the uterus does not interfere with menstruation. In married women such tumours sometimes interfere with coitus, and I have removed them on this account. If a cervical fibroid gets infected or extruded into the vagina, alarming bleeding leads to its discovery, but the tumour is more likely to be detected when it leads to retention of urine. A tumour in the neck of the uterus hinders but does not prevent conception, but it is a formidable obstruction to delivery, and liable to red degeneration when associated with pregnancy.

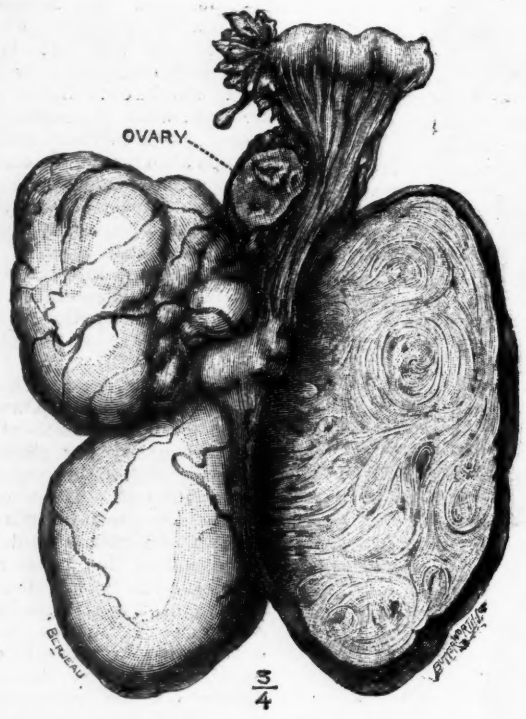

FIG. 2.—Ovarian fibroid cut to show the whorled disposition of its fibres. Removed from a woman aged 70, in whom it caused retention of urine by becoming incarcerated in the pelvis.

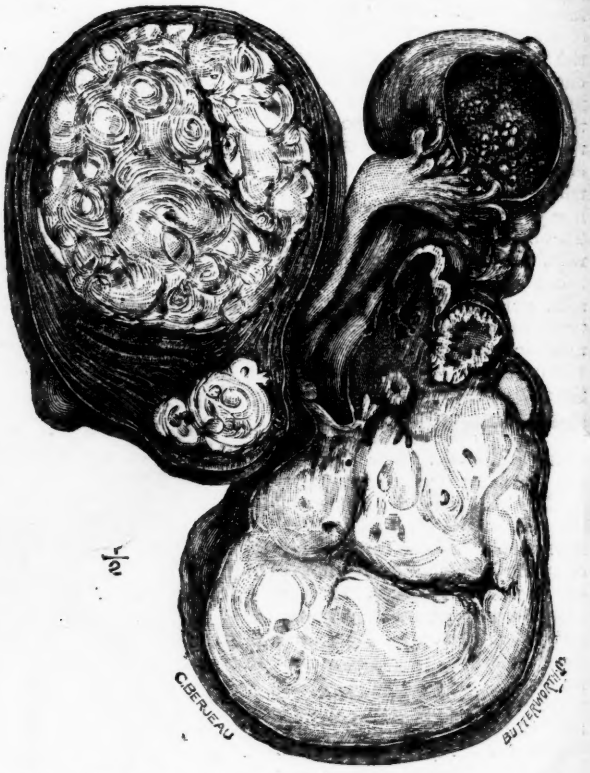

FIG. 3.—Uterus in section containing fibroids, and the ovary, also shown in section, is partially occupied by a fibroid. The ovary contains a corpus luteum. From a barren woman aged 43.

Ovarian Fibroids.

In consistence and shape ovarian resemble uterine fibroids, and the likeness extends to minute structural details, even to the whorled disposition of the fibres. The capsule of an ovarian fibroid is pearl-white and intensely hard, harder than the common forms of uterine fibroids. This hardness is a valuable diagnostic sign and enables the nature of the tumour to be anticipated. Fibroids of the ovary arise at any period of life after puberty. I removed one from a girl aged 19; also from a septuagenarian spinster.

In elderly women ovarian fibroids are sometimes accompanied by hydroperitoneum; this often arouses a groundless suspicion of malignancy. Ovarian fibroids, as a rule, have a smooth contour and are occasionally bilateral and sometimes co-exist with uterine fibroids (Fig. 3). They

may become cystic and some calcify. These tumours do not influence pregnancy nor undergo red degeneration, but an incarcerated ovarian fibroid usually offers an impassable barrier to the fetus. An incarcerated ovarian fibroid may lead to retention of urine (Fig. 2).

DIAGNOSIS.

The various changes in the consistence of fibroids have a remarkable effect on diagnosis. Until surgeons displayed great activity in removing them the diagnosis of uterine fibroids was regarded as a simple clinical exercise. It is often difficult to differentiate clinically between cystic fibroids and big cyst-adenomas of the ovary; or between ovarian fibroids and subserous uterine fibroids. Occasionally it is impossible to decide between a soft submucous fibroid and pregnancy on physical signs alone. Time alone enables a decision to be made. Gynaecologists have operated under the expectation of removing a fibroid but have found a calcified fetus (lithopaedion). A dead fetus in the rudimentary horn of a so-called unicorn uterus has been removed in belief that it was a fibroid; the error was discovered when, from sheer curiosity, the operator or his assistant cut into the mass. Olshausen had an odd experience in 1902. He removed a gravid uterus from a woman aged 38, under the impression that it contained a cystic fibroid. The mass proved to be a large sacral tumour growing from the buttocks of an intrauterine fetus. A pelvic spleen has been mistaken for a subserous fibroid; a freely movable fibroid lying high in the belly has been diagnosed as an enlarged spleen; and some, with long stalks, as movable kidneys. Such errors are rarely serious. A cancerous mass in the pelvic colon, lying behind the uterus, is often mistaken for a subserous fibroid. This is always an unfortunate error, because operative interference, undertaken on the idea that the mass is a benign fibroid, causes chagrin to the surgeon when it ends in colostomy; and especially when a gynaecologist, with overweening confidence, has assured the patient and her relatives that the tumour is a fibroid, and its removal simple and safe.

As the protean manifestations and combinations of pelvic tumours are ofttimes puzzling, I have ventured to frame a few aphorisms, in the manner of Agur the sceptic (150 B.C.), which may be useful to you, not as examination tricks, but for stern practice.

Two things disquieting in diagnosis:

1. To distinguish between solid ovarian tumours and large subserous fibroids.
2. And between tubal swelling and uterine fibroids.

Three foolish things:

3. To give opinions on pelvic swellings without making a vaginal examination.
4. Or on hypogastric swellings without passing a catheter.
5. To remove fibroids without examining the woman's urine for sugar until she is comatose two or three days after the operation.

Four things useful to know:

6. When a barren woman between 35 and 45 has retention of urine, it is almost certain that she has a fibroid in her womb.
7. A fibroid that suddenly becomes painful during pregnancy is probably in a state of red degeneration. The clinical signs simulate tubal pregnancy, axial rotation of an ovarian tumour, and acute infection of the appendix.
8. Errors in the differential diagnosis of fibroids and pregnancy are usually made before the beating of the fetal heart is audible.
9. A cancerous mass in the pelvic colon, in contact with the uterus, imitates the signs of a subserous fibroid.

Four things that are wise:

10. When in doubt whether a big uterus in a young woman contains a child or a fibroid, wait for a month and re-examine the patient.
11. To remember that ovarian tumours give much trouble to pregnant and lying-in women, but fibroids are more deadly, for they are liable to become septic.
12. After the removal of a fibroid in the procreative period of life a woman is more liable to grow more fibroids than to conceive successfully.
13. To remember that uterine bleeding after the menopause, in a barren woman with a fibroid, often signifies the existence of cancer within the uterus.

"As the churning of milk bringeth forth butter, and the wringing of the nose bringeth forth blood," so the diagnosis of fibroids will continue to perplex surgeons. In the past women often endured unnecessary suffering from the blind belief that fibroids are tumours capable of easy recognition.

TREATMENT.

In this hospital during 1892 three women had the uterus removed for troublesome fibroids. Two died in consequence of the operation. In 1912 there were seventy-one abdominal hysterectomies performed in the hospital for fibroids and all recovered. This was a great improvement in twenty years. Of the last 200 cases of hysterectomy for this disease that I have performed in the hospital all the patients recovered. Time has amply vindicated the surgical treatment of uterine fibroids by proving that no physiological evil attends the loss of the uterus. Coincident with this improvement in the mortality-rate there has been a marked diminution in the sequelae. Among the 200 hysterectomies 188 were subtotal. The merits of this operation are now so well known that there is no need for me to recapitulate them. Hysterectomy has been performed in my ward for adenomyoma, fibrosis uteri, cancer, and septic infection, during the period covered by the 200 cases of fibroids the subject of this lecture. All the patients recovered. Also three with ovarian fibroids and four abdominal myomectomies. Mr. C. H. S. Webb, late surgical registrar, allows me to state that he has examined the registers and endorses the accuracy of my statement. (The series continues unbroken.)

Methods.

These results have been obtained with a minimum use of antiseptics. The skin of the abdomen is painted with tincture of iodine an hour before operation. The cut surface of the cervical stump is swabbed with the tincture. Sterilized silk is exclusively used for ligatures and sutures. The surgeon, assistants, and nurses wear sterilized rubber gloves. After the closure of the cervical stump, the gloved hands are thoroughly rinsed with a solution of mercury perchloride (1 in 5,000). The abdominal incision is then secured with sutures, and the line of the incision, as well as the adjacent skin, lightly painted with tincture of iodine. No dressings are used. It is my custom in selecting house-surgeons to choose officers who have filled a resident appointment to a physician. The house-surgeon submits all patients set down for operation to a systematic examination. Women with uterine fibroids who show signs of diabetes, exophthalmic goitre, cardiac disease, arterial sclerosis, and albuminuria are rarely submitted to hysterectomy.

In conclusion, let me recommend you to eschew textbook descriptions of hysterectomy. Learn the technique by assisting a surgeon of experience.

SIR CHARLES BENT BALL, Honorary Surgeon to the King in Ireland, left personal property in the United Kingdom valued at £19,397.

IN a communication made to the Académie des Sciences of Paris (*Photo-Revue*, Paris, June, 1916) Dr. Marage has described the use of the cinematograph in the treatment of nervous stuttering. He first photographed on the one film a normal and a stuttering subject during the utterance of the same phrase, and then each separately. The person affected with the complaint is thus able to study the movements at his leisure and to note his fault. At a demonstration the phrase chosen was "Bonjour, papa," and the difference between the two renderings was shown to relate, not only to the rapidity of the enunciation, which was three times as great in the case of the abnormal subject as in the other, but also to the much greater force, in the former case, of the explosives *b* and *p*. Once having recognized his fault, the patient went on to certain respiratory exercises. It is claimed that this method, owing to the vividness of the impression it makes on the patient, is superior to the use of the gramophone record.

SOME NOTES ON TRENCH FEVER.

BY

CAPTAIN T. STRETHILL WRIGHT, M.B., R.A.M.C.

THE following notes were begun during the winter, 1915-16, and are compiled from clinical observations made on cases admitted to the medical wards of a stationary hospital from the middle of November to the end of March.

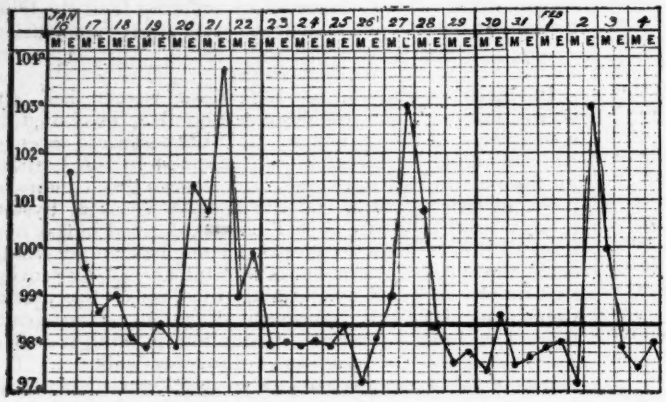

CHART 1.—Sudden onset on evening of January 14th. Temperature had fallen almost to normal within seventy-two hours of appearance of first symptoms. Temperature after February 4th did not rise above normal.

Among the very large numbers of cases that came down to us from the front labelled "influenza" and "P.U.O." there were some thirty cases of a new type; the curious character of the temperature charts, which showed a series of "spikes" occurring at more or less regular intervals, and separated by afebrile periods, attracted attention. These cases were carefully observed, and a remarkable similarity was noticed in the symptoms they presented and in the course they ran. This was before Captain McNee, Lieutenant Renshaw, and Captain Brunt had published in the BRITISH MEDICAL JOURNAL (February 12th, 1916) their exhaustive description of trench fever, but the new disease had already been much talked of.

Our cases presented a definite clinical picture unlike that of any known disease; the character of the pyrexia and the symptoms conformed to the type that we had come to associate with trench fever, and before the end of November we had begun to employ this term in diagnosing them.

CHART 2.—Onset two or three days before admission. No fever before March 8th. Sent down as case of "rheumatism." Temperature after March 22nd did not rise above 99°.

Incidence.

The cases were all young men, or men in the prime of life, and the great majority were infantrymen who contracted the disease while in the trenches; there were two or three artillerymen who had been living in dug-outs, one A.S.C. man attached to a field ambulance, and a couple of R.A.M.C. orderlies also attached to field ambulances.

In one or two instances it was suspected that patients contracted the disease while in the ward—for example, cases sent down from the front labelled "rheumatism" or "myalgia," who had normal or subnormal temperatures for a week before the first "spike" appeared on the chart; but since Captain McNee has stated that the incubation period may be as long as twenty-two days we are not in a position to confirm the suspicion.

Etiology.

The ultimate cause of the disease is as yet a matter of speculation. Permission to perform inoculation experiments here could not be obtained, but the infectivity of the disease has been proved by Captain McNee by its ready transmission from one person to another by the blood, and his experiments also seem to have demonstrated that the virus is contained within the blood corpuscles themselves, whether leucocytes or red cells. As regards its transmission, he suggests that

> the disease is either contagious from man to man or, what seems much more likely, is carried by one of the common flies or parasites found in the trenches. During the past summer lice, mosquitos, midges, and flies of other kinds have all been common in the Flanders war zone.

The fact that we have been getting cases of trench fever throughout the winter suggests that the infection can hardly be conveyed by mosquitos, midges, or flies.

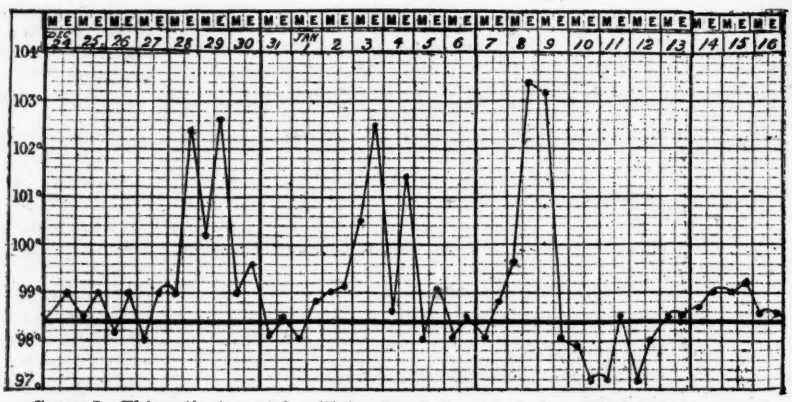

CHART 3.—This patient was taken ill five days before admission. No information could be obtained as to duration or intensity of any pyrexia there may have been during this period. In this case headache and pain and tenderness in abdominal muscles attached to costal margins were the predominant symptoms. Temperature after January 16th did not rise above normal.

Lice, however, thrive all the year round; further, there has been a plague of rats and mice not only in the trenches, but also in the artillery dug-outs and in the barns and stables that serve as billets for the troops, and

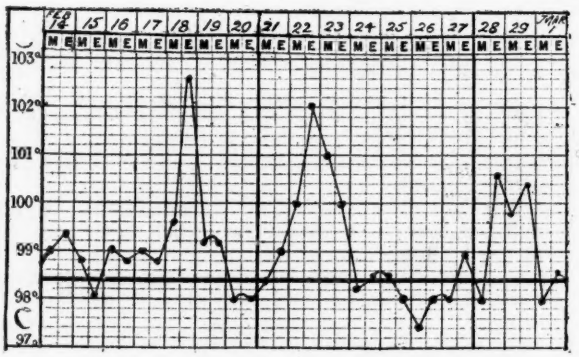

CHART 4.—First symptoms appeared on day before admission—headache, pain in small of back and calves. Temperature after March 1st did not rise above normal.

these vermin, infested as they are by fleas, lice, and other parasites, may be the agents that transmit the infection.

Clinical Features.

The onset is generally sudden, according to the accounts given by the men. The majority complained of severe headache and pain in the legs and small of the back. The headache was not uncommonly associated with dizziness, and these symptoms sometimes came on so suddenly and with such violence that the patient was unable to stand and had to be carried to the dressing station.

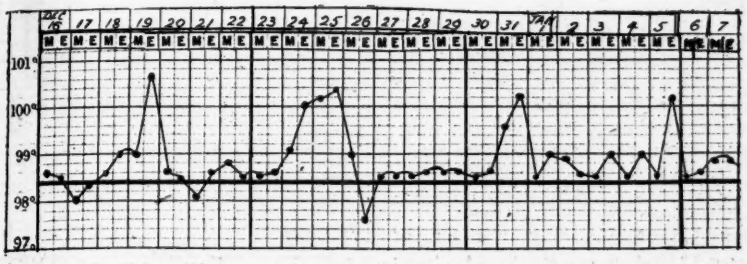

CHART 5.—This patient was taken ill suddenly in the trenches eleven days before admission with shivering, fever and pain in head, back and legs. This is one of the two cases in which it was not possible to establish the length of the initial fever. All the "spikes" are comparatively short; the first one recorded occurred a fortnight after the onset of the disease, and may have been the second relapse. Temperature after January 7th did not rise above 99°.

The pain in our cases, as far as we could determine, was invariably muscular. Several patients said they had pain in the shins, but on examination there was no tenderness upon pressure on the tibia, while pressure on the muscles along the outer and inner borders of the bone caused acute pain.

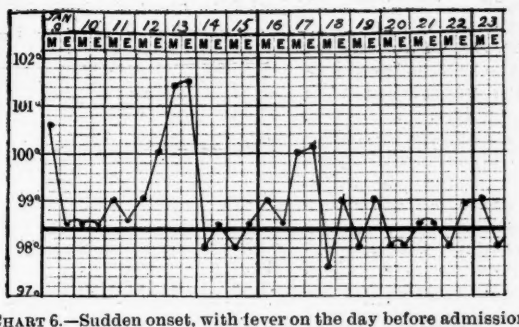

CHART 6.—Sudden onset, with fever on the day before admission. Temperature after January 23rd did not rise above normal.

This was in marked contrast to the symptoms presented by another febrile affection, very common in our wards at this time, to which for convenience we gave the name of "shin fever." The chief characteristics of shin fever were persistent pain and tenderness in the tibiae, a low irregular pyrexia generally lasting two to three weeks, "fluffiness" of the tibial periosteum—shown by *x* rays—and marked leucocytosis.

There was a certain amount of variation in different cases of trench fever in the muscles affected, but the infection was invariably bilateral. In some cases the pain in the lower limbs was limited to the anterior muscles of the legs, in others to the muscles of the calves. Pain was frequently felt at the back of the knees and in the muscles of the thighs.

In two cases there was no pain at all in the lower limbs, but pain and tenderness in the muscles attached to the costal margins, and this pain was much increased by contracting the abdominal muscles, as for example, in the effort to sit up.

During the febrile paroxysms which characterize the disease the pain in the muscles and the headache were always worse, and there was general malaise, but during the intervening afebrile periods it frequently happened that all symptoms disappeared, the patient felt perfectly well, and was allowed to get up and take ordinary diet. The pain in some instances was continuous throughout the course of the illness, and in these cases it was sometimes so severe during the febrile periods as to require the administration of morphine.

The fever was always associated with loss of appetite and the tongue was generally coated; sweating was a common accompaniment of the sharp falls in temperature. The only other common symptom noted was a tendency to constipation.

The Fever.

In the great majority of cases the illness begins with a sharp rise of temperature, but occasionally there is no fever until the third or fourth day after the appearance of the symptoms.

Some of our cases reached us within twenty-four hours of reporting sick, and quite a large number within three days. In certain cases it was impossible to determine the length of the initial period of pyrexia, as they were sent down from the front without any notes. However, in the majority of cases it was possible, by starting from the last day on which the patient felt perfectly well and was able to do his work, to fix an outside limit for the duration of the initial fever.

A careful study of the history of each case led to the conclusion that the average length of the initial period of pyrexia was two to three days.

Captain McNee divided his cases into two classes:

In Class A there was an initial period of fever lasting about a week, generally followed by a single relapse.

In Class B the initial fever was shorter and was followed by a series of relapses.

We of course saw far fewer cases than he, but we found it impossible to classify them in this way. We have a number of instances in which the initial fever lasted only two days, and yet was only followed by a single relapse; in others an initial pyrexial period of two or three days was followed by several relapses, like Captain McNee's Class B. We have no unequivocal examples of his Class A, which in his experience was the more common type.

The accompanying charts illustrate these points. The first seven show a series of two or more relapses following the initial rise of temperature, the remainder show only a single relapse; in all except two (Charts 3 and 5) there was evidence to show that the initial fever was short.

After reviewing all the cases in which the duration of the initial fever is recorded or can be calculated (comprising the majority of our series), we have come to the conclusion that these all belong to a single type, the characteristics of which are a sudden onset with a short bout of fever lasting two or three days, followed by one or more relapses.

As a general rule the severity of the symptoms is proportional to the height of the temperature, but it seems impossible to predict from the intensity of the fever of onset whether the disease will run a long or a short course—that is, whether there will be one or several relapses.

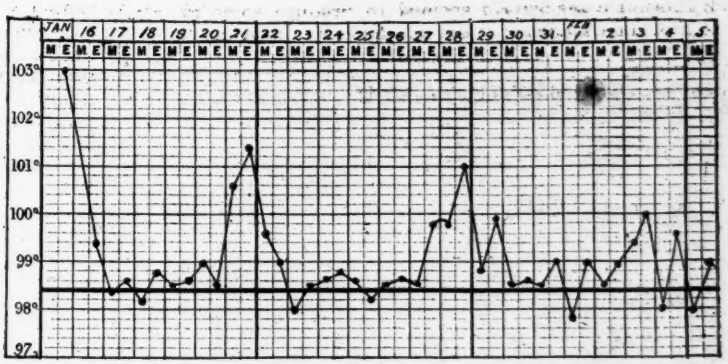

CHART 7.—This patient was taken ill suddenly two days before admission; his field medical card recorded his temperature (103°) on the evening of January 15th. Temperature after February 5th did not rise above 99°.

The relapses recorded on our charts vary from one to three in number; they may occur every fifth, sixth, seventh, or eighth day, but it is uncommon for the spacing to be exactly regular throughout the illness in each case. The most characteristic thing about them is the sharpness of the rise and fall of the temperature, which gives the

chart a peculiarly "spiky" appearance. The temperature may settle down immediately after the last "spike," or there may be a mild, irregular pyrexia lasting a week or so before convalescence is finally established.

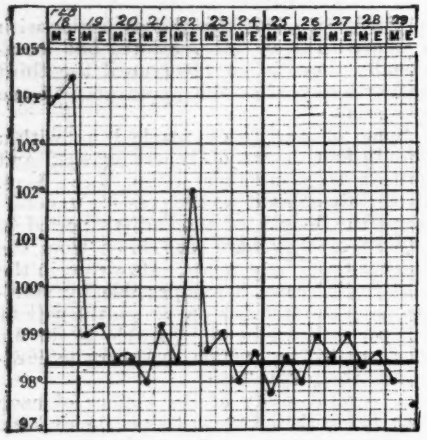

CHART 8.—This case was perfectly well until the evening of the day before admission; he was suddenly seized with violent headache and acute pain in muscles of legs and small of back.

In most of the cases the pulse during the febrile paroxysms was comparatively slow; it did not often go above 100. After the last relapse a tendency to tachycardia and irregularity of the heart's action was noticed in several cases.

Treatment.

The treatment adopted here was mainly symptomatic, the cause of the disease being still unknown.

Various drugs, including potassium iodide and arsenic

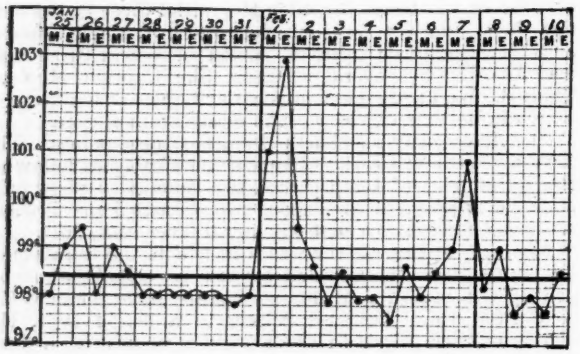

CHART 9.—This patient was sent down suffering from nervous debility and depression, and developed the signs and symptoms of trench fever in the ward. Temperature after February 10th did not rise above normal.

were employed, but none were found to have any specific action on the disease.

In some cases aspirin seemed to produce some alleviation of the headache; it did not appear to have any effect

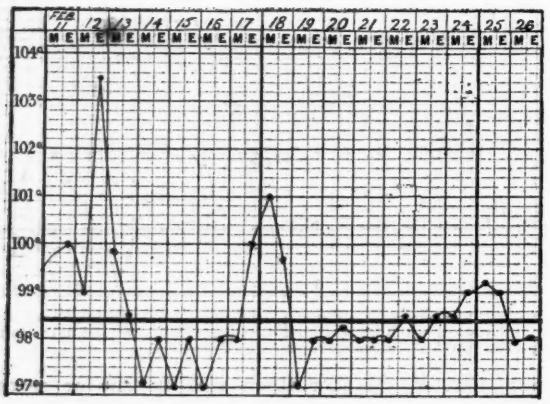

CHART 10.—The first part of this chart is a copy of one brought by patient from the casualty clearing station; the attack began suddenly on February 11th, while he was undergoing treatment for scabies.

on the fever or on the pain in the back and lower limbs. In the severest cases occasional doses of morphine were administered.

The patients were kept in bed and put on a fluid diet during the febrile paroxysms; in the intervals most of them were well enough to get up and take ordinary food. The treatment of the tachycardia and debility that were often present during convalescence calls for no special comment.

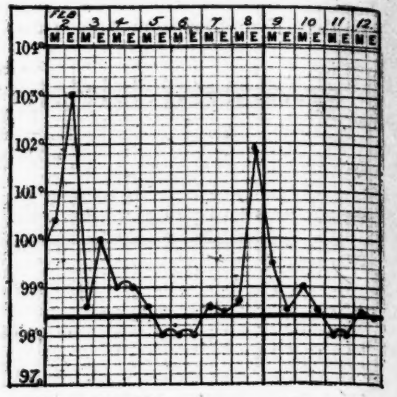

CHART 11.—This case was sent down with history of inflamed foot; this had been opened and the wound had healed on his arrival here. The first "spike" of trench fever appeared on the evening of the day of admission.

Diagnosis.

A few words may be added as regards the differential diagnosis.

Examinations of the blood, faeces, and urine of a large number of the cases were made by Major Hume and Captain Greenfield, R.A.M.C., with the object (*a*) of discovering, if possible, some clue to the causation of the disease, and (*b*) of excluding the enteric group.

(*a*) Attempts to discover the presence of an organism to which the infection may be attributed have not yet been rewarded with any success. It seems superfluous, therefore, to give an account of the various investigations undertaken with this object. It may be noted in passing that a moderate leucocytosis was found to be a common but not a constant feature. Punctate basophilia was also observed in the blood films examined, but this phenomenon was also encountered in cases not suffering from trench fever.

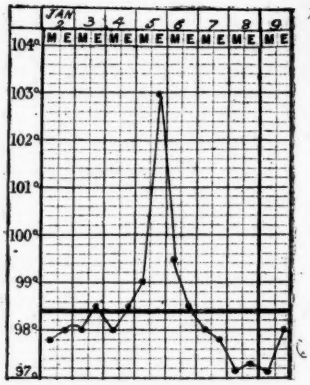

CHART 12.—Sudden onset two days before admission, with high temperature; the height was not recorded on the field medical card. The chart shows a single typical relapse.

(*b*) It had been suggested that the disease was perhaps an atypical form of enteric—"typhoid fever in the inoculated." The clinical picture presented was all against this hypothesis—for example, to mention only two points, none of the patients ever had any rash, and in no case was the spleen enlarged or tender. However, the question was finally settled in the laboratory.

All our cases without exception had previously been inoculated against typhoid, and this fact had to be taken into consideration in interpreting the Widal reaction. Blood was taken at various times in the course of the disease, at the height of the fever and during the afebrile periods, but in all cases examined the evidence of typhoid or paratyphoid infection was negative, cultures from the blood all proved sterile, and cultures from the stools also gave negative results.

It may be confidently affirmed, therefore, that these were not atypical cases of enteric but genuine cases of "trench fever," and, though it would be imprudent to dogmatize while the cause of the infection remains undiscovered, we can at least say that the disease has every appearance of being a definite clinical entity.

In conclusion, I should like to express my grateful acknowledgements to Colonel Butler, D.S.O., for many helpful suggestions, and to Major Hume and Captain Greenfield for their kindness and patience in carrying out investigations in the laboratory.

DR. A. B. MACALLUM, professor of physiology in the University of Toronto, has been elected president of the Royal Society of Canada.

THE PATHOGENICITY OF GIARDIA (LAMBLIA) INTESTINALIS TO MEN AND TO EXPERIMENTAL ANIMALS.

BY

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INTRODUCTION.

WHILE British troops were in Gallipoli, a number of men contracted various forms of dysentery or diarrhoea, and severe cases occurred. Among the men invalided to England a number were found to be infected with *Giardia (Lamblia) intestinalis*, and some harboured no other dysentery-producing organism. We personally found 187 cases of pure lambliasis among 1,305 patients. Similar cases of pure lambliasis have occurred on the western front, while from the various war zones patients with mixed infections have been common. The pathogenicity of *Giardia (Lamblia) intestinalis* has been disputed in certain quarters. We have always believed that the organism was pathogenic, and published the same in 1915 and 1916. We here give our personal evidence, based on our observations of pure cases of lambliasis in man and of some experiments with human Lamblia on animals. We may say at once that in both human and animal lambliasis stools, as well as at *post-mortem* examinations, erosion and distortion of the intestinal epithelial cells occurred, owing to the direct suctorial action of the flagellate Lamblia.

HUMAN CASES.

Recently an account was published by one of us of a numerical study of a series of seven cases of soldiers in whom diarrhoea or dysentery had been reported, and in whom no protozoön other than Lamblia nor dysentery bacillus was found, after repeated examinations, to account for the symptoms produced. These cases were of men who contracted violent diarrhoea or dysentery in Flanders or in Gallipoli, so that two strains have been under constant observation. Experiments have been conducted with these two strains, which we term the "Flanders" and the "Gallipoli" strains. Some variations in virulence between the two strains occurred, the Flanders strain being the more virulent both in man and in subinoculated animals, but the Flanders case was a somewhat more recent infection.

The full history of the men will be found in the paper already mentioned, and need not be given in detail here. As a general statement, all the patients were weak, especially after a little exertion, and one case from Flanders was weak when admitted to hospital, and has been weak ever since. At times most of the men were somewhat constipated. Occasionally the temperature was slightly subnormal, but the charts showed little that was noticeable. There was a distinct increase in the number of mononuclear leucocytes and lymphocytes in the blood.

The stools were sometimes of peculiar colours and consistencies; many were sulphur yellow in colour, but in some cases the colour was hardly different from that of normal stools. In the case of one patient who contracted lambliasis in Flanders, the stools were almost always bulky and diarrhoeic in character, and were compared at different times with khaki, mud, putty and whipped cream. At times, blood was voided with the stools.

It has been assumed by some workers that human lambliasis is confined to the tropics. This is not so. *Giardia (Lamblia) intestinalis* is well known in Italy, and lambliasis seems to be endemic there, children being more severely affected than adults. It also occurs in Russia and Germany. Again, lambliasis has been contracted in Flanders by a man who had never left England until he went to Flanders two months before his illness. The assumption as to the tropical localization of lambliasis, therefore, is not really accurate.

A second hypothesis set forward is that in cool countries the virulence of lamblial infections is reduced. This, again, does not seem to be borne out by some of our cases. The most virulent infection with Lamblia in man and in subinoculated animals that we have encountered came from Flanders, and the patient, prior to proceeding there, had never left this country. The virulence of the lamblial infection was not reduced in his case. Lamblial diarrhoea in children has been described by Mello Leitao in Rio de Janeiro. Virulence does not seem to be dependent on geographical distribution, and in our present state of knowledge it is unwise to make generalizations.

ANIMAL EXPERIMENTS.

Our experiments were made with kittens and with mice. Lamblia is only rarely encountered in carnivores, but is more common in rodents. Before our animals were actually used for experiment we examined their faeces daily for periods up to a month and at times aperients were administered, but no Lamblia was seen. These precautions were very necessary in the case of mice, as lambliasis occurs naturally in them, being described as producing "chronic enteritis." We believe that all our experimental animals were quite free from natural lamblial infections before experimentation. The experimental animals were given food contaminated with human faeces containing Lamblia cysts or with emulsions of faeces likewise parasitized. By repeated decantation and centrifuging of emulsions of faeces, Lamblia cysts free from débris were obtained. Control animals were given food contaminated with similar quantities of normal human faeces or with faecal emulsions free from débris.

Daily examinations of the faeces of each of the experimental animals and of the controls were made, as well as full examinations at death. Preparations of the parasites in the fresh state or fixed and stained smears, and sections of the gut were used, the results obtained in each series corroborating those obtained by other methods used. Details of the experiments may now be set forth.

Experiment I. (H. B. F.)

A male kitten, weight 725 grams, was fed with milk containing Lamblia cysts (Gallipoli strain) that had been separated from débris by washing and decantation, followed by centrifuging. On the second day a very few Lamblia cysts were found in the faeces, and as these might merely have passed through the alimentary tract unchanged, a second feed of contaminated milk was given. On the third day the faeces of the kitten were markedly diarrhoeic, of a yellowish-green colour, and contained a few young Lamblia cysts. A similar condition was found on the fourth and fifth days. No parasites were found on the sixth and seventh days, but on the eighth day a few young Lamblia cysts occurred in the faeces, which were very fluid. On the twelfth day after the first feed the faeces of the animal were very foul-smelling, and the anus showed signs of inflammation. The kitten did not feed well this day. On the fifteenth day two empty Lamblia cysts were observed in a preparation of the faeces, but no more cysts were found in the faeces until the twenty-fourth day. They disappeared again until the twenty-seventh day, when one cyst was found, but no more parasites were seen until the twenty-ninth day, when a few motile flagellates and a very few cysts were present. No more Lamblia were observed until the thirty-second day, when a few cysts were passed. The same occurred on the thirty-third day. From then till the forty-fourth day the faeces were negative. On the forty-fourth day the faeces were loose and diarrhoeic, and Lamblia cysts and flagellates appeared in them. The kitten showed signs of distress, howled, and refused food. Its coat became rough, and the animal shivered. On the forty-fifth, forty-seventh, and forty-eighth days some Lamblia cysts were present in the faeces. The kitten seemed ill, vomited, sent up piteous cries, and the condition of the coat was bad. Violent diarrhoea set in on the forty-eighth day, and the kitten died on the forty-ninth day after the first infective feed. At death it weighed 638 grams, its control weighing 997 grams.

At autopsy, the blood vessels of the stomach and intestine were engorged, and the mucous membrane showed signs of erosion. Flagellate Lamblia, and some rounding, encysting forms were present in the duodenum, and a few flagellates were seen in the jejunum and ileum. The caecal contents were hard and whitish, but no Lamblia were found in them. Fluid faeces oozed from the anus at death, and a few Lamblia cysts were found in this discharge. The body was thin, but otherwise the remaining organs were normal.

Experiment II. (H. B. F.)

A female kitten, weight 712 grams, was fed with milk containing Lamblia cysts (Gallipoli strain), freed from débris. On the third and fourth days after the infective feed the faeces were diarrhoeic, and a few Lamblia cysts occurred therein. The faeces were also foul-smelling. The kitten did not feed well from the twelfth to the seventeenth day, when it ate greedily, but became violently diarrhoeic. Lamblia cysts were not found until the twenty-seventh day, when a recurrence took place, a few cysts being voided. On the twenty-ninth day active flagellates were passed in the faeces, and for the next five days a few cysts were found. They were then absent till the fortieth day, when they reappeared, but no more were seen

till the forty-fourth day. The kitten now became much more diarrhoeic, howled a great deal, vomited much, and was restless. The diarrhoea continued, cysts and flagellates being passed in the excrement on the fiftieth, fifty-first, and fifty-second days. The animal then became drowsy, and died on the fifty-third day after the infective feed. At death it weighed 793 grams; the control weighed 965 grams, its weight at the commencement of the experiment being 710 grams.

At autopsy, the spleen was large and the blood vessels of the stomach and intestines engorged. The mucous membrane of the duodenum was stripped in parts, whole villi being found in the contents. The caecum was slightly enlarged, and there was much cell débris in the colon. Some flagellates and a few cysts were found in the duodenum and the jejunum. Cysts were also present in the colon. The contents of the rectum contained no parasites. The relative fewness of the Lamblia probably resulted from the constant voiding of them in the diarrhoeic faeces.

Experiment III. (H. B. F.)

A male kitten, weight 307 grams, was fed on milk containing Lamblia cysts of the Gallipoli strain. On the second and third day the faeces were negative; on the fourth, fifth, and seventh days Lamblia cysts and a few flagellates were seen. The kitten seemed to weaken a good deal on the sixth day and died on the eighth day. It then weighed 290 grams, the control kitten belonging to the same litter weighing 330 grams.

At autopsy, general inflammatory conditions of the intestine were observed with much injection of the blood vessels. Flagellate Lamblia were present in the proximal loop of the duodenum, and were more sparsely distributed down the rest of the small intestine. There were some cysts both in the duodenum and the caecum, while a few were present in the faecal pellets. The control kitten was found to be free from parasites when killed.

Experiment IV. (H. B. F.)

A female kitten, weight 325 grams, was fed with cysts of Lamblia (Gallipoli strain) in milk. A control of the same litter and of equal weight was given milk containing normal human faeces. The excrement of the experimental kitten contained Lamblia cysts on the fourth, fifth, and sixth days after feeding. On the third day the kitten became diarrhoeic, and continued so until it died on the sixth day, its weight then being 305 grams. The control remained healthy, and when killed on the sixth day weighed 339 grams. At autopsy a similar condition prevailed in the experimental kitten to that shown by the kitten of Experiment III, but there were rather more parasites.

Experiment V. (H. B. F.)

A male kitten was fed with food contaminated with Lamblia cysts, Gallipoli strain. It weighed 425 grams. The faeces were examined daily, but no Lamblia were found in them. The animal was killed after two months and was found normal at autopsy.

Experiment VI. (A. P.)

The strain of Lamblia used in this and in Experiment VII was derived from a patient who contracted lambliasis in Flanders and who had never left England before going to Flanders. Samples of his stools had been kept for some time, and the one used for these experiments had been passed seventy-four days before it was used. Some light is thus shed on the duration of vitality of the cysts of *Giardia* (*Lamblia*) *intestinalis*.

A female kitten, weight 400 grams, was fed with food contaminated with Lamblia cysts from the Flanders strain. Its faeces were examined daily. On the second, third, fifth, and seventh days they were negative, but a few Lamblia cysts were seen on the ninth and eleventh days. After the infective feed, the kitten soon became thinner and showed signs of diarrhoea and general discomfort. The diarrhoea became more marked and the animal was noisy, giving forth piercing howls. It died after eleven days. At death the body was somewhat emaciated, the blood vessels of the stomach, intestine, and mesentery were injected, and the walls of the duodenum were thin. The duodenal mucosa was disintegrated, some of the villi being stripped off. Lamblia, both free and attached to epithelial cells, were present in the proximal loop of the duodenum, a fair number occurred in the distal loop and a few were present in the jejunum. In the caecum a few flagellates occurred together with some encysted Lamblia, and cysts were found in the rectal contents. The control kitten never showed any sign of infection, remained healthy, and weighed 660 grams at the time of death of the experimental animal, which then weighed 375 grams.

Experiment VII. (A. P.)

A female kitten, weight 410 grams, was fed with milk containing Lamblia cysts of the same strain and age as those used in Experiment VI. The symptoms produced were like those described for the previous subject. On the ninth and eleventh days after the infective feed Lamblia cysts were present in the faeces of the kitten and the faeces were very diarrhoeic. At death, which occurred on the twelfth day after the infective feed, the kitten weighed 375 grams, the loss of weight being thus greater than in the preceding case. At autopsy similar results were obtained to those in the preceding case, but the parasites appeared to be rather less numerous. The control kitten, which weighed 520 grams, though of equal weight at the commencement of the experiment, was found to be quite normal when killed on the day of the death of the experimental animal.

Experiment VIII. (A. P.)

A male kitten was fed with food containing cysts of Lamblia from a patient from Gallipoli. The animal was under observation for ten weeks, but showed no parasites, nor were any found when the animal was killed.

Experiment IX. (H. B. F.)

An adult female mouse was fed on food contaminated with cysts of *Giardia* (*Lamblia*) *intestinalis*, Gallipoli strain, which had been separated from débris. A control mouse, which was of equal weight to the experimental one, was given food to which normal faeces had been added. On the second day after feeding, a few empty Lamblia cysts were found in the faeces of the experimental mouse, the control being negative, both on this date and onwards. On the sixth day the faeces were negative. On the eighth day the faeces showed a blood streak along their length, and several Giardia, like those in man, were found in active movement. Flagellates and cysts in scanty numbers were observed on the ninth day. Until the fifteenth day no parasites were seen, but it was noticed that the mouse was growing thinner, and on the fifteenth day fairly numerous Lamblia cysts were voided in the faeces. On the sixteenth day the mouse was constipated, and the faecal pellets, voided with difficulty, contained a few cysts. On the eighteenth day the mouse was diarrhoeic and shivered considerably. Its coat was staring and eyes protruding. On the nineteenth day after the infective feed it was found dead.

Post mortem the blood vessels of the mesentery were found to be engorged, and a general inflammatory condition of the intestine was present. Numerous flagellate Lamblia were present in the duodenum. No parasites were found in the caecum or in the large intestine. The mouse weighed 10.6 grams at death, having lost 4.2 grams in weight. The control weighed 20.4 grams.

Experiment X. (A. P.)

An adult female mouse, weight 12.5 grams, was given food contaminated with cysts of *Giardia* (*Lamblia*) *intestinalis* of the Gallipoli strain, its control being provided with food contaminated with normal faeces. On the second day after the infective feed, a number of empty Lamblia cysts were found in the excrement of the experimental animal. No more cysts were seen in the faeces until the eighth day. On the ninth day no parasites were present, and none were seen until the fifteenth day, when a few cysts were voided. The mouse showed some signs of distress, and was noticed to be getting thinner. On the sixteenth and seventeenth days cysts were found in the faeces, the mouse being alternately constipated and somewhat diarrhoeic. On the eighteenth day the mouse was ill, the coat was staring, and there was constipation. Shivering occurred, and also on the nineteenth day. On the twentieth day the animal was killed *in extremis*. At autopsy the blood vessels of the stomach, mesentery, and intestine were engorged or injected, and the gut showed obvious inflammation. Shed epithelial cells were present in the gut contents, and active flagellate Giardia were attached to them. Duodenal ulcers were present, and the cells of the mucosa to which parasites had attached themselves showed distinct erosion. A few cysts were present. Flagellates were also found in the jejunum, where the number of young cysts was somewhat larger. No parasites were found in the ileum. In the caecum a few flagellate Lamblia occurred, together with a large number of mature cysts. The colon contained a few flagellates about to encyst and numerous cysts. The rectum contained no flagellates as such, but a few forms in process of rounding subsequent to cyst formation were seen, as well as some fully formed cysts. The mouse weighed 9.4 grams when killed.

Experiment XI. (A. P.)

A male mouse, weight 14.4 grams, was given cysts of Lamblia, Gallipoli strain, in milk. The faeces were observed daily for seventy days, but no Lamblia was seen. The mouse was then killed, but was found to be uninfected. It had increased in weight to 20 grams.

Experiment XII. (A. P.)

A male mouse, weight 14.8 grams, was given food containing Lamblia cysts of the Gallipoli strain. A few normal and several empty cysts were observed in the faeces on the second day after feeding. No more parasites were seen in the faeces until the eighth day, when the faeces contained mucous streaks in which a few flagellate and encysted Lamblia were present. On the ninth day the faeces were normal in appearance, and no parasites were found. The mouse had been getting somewhat thinner, but not much difference in its condition was obvious. From the sixteenth to the twenty-first day the faeces of the mouse were negative, the animal increased in weight and improved in general condition. On the twenty-first to twenty-sixth days a few Lamblia cysts were present. On the thirtieth day some flagellate Lamblia were found, together with young cysts. On the thirty-first day no cysts were seen but rare flagellates occurred. From the thirty-second to the thirty-sixth day the faeces were negative. Very few flagellates and cysts were present on the thirty-seventh and thirty-eighth days, and none were present on the thirty-ninth day. A single cyst was found in a preparation of the fresh faeces on the fortieth day, but until the forty-third day no more were seen. On the forty-third day a recurrence took place, a very few young flagellates being shed in the faeces. No more parasites were observed until the fifty-sixth day, when some cysts were passed. A negative period followed till the sixty-second day, when the

faeces were diarrhoeic and some flagellate forms were seen. From the sixty-second to the seventieth day the mouse grew thinner rapidly, passed diarrhoeic faeces, and shivered; it died on the seventieth day. At *post-mortem* examination, injection of the blood vessels of the stomach, intestines, and mesentery was found; the duodenum contained numerous Lamblia, and there were some parasites sparsely scattered throughout the intestine. This case may be regarded as one of chronic infection.

Experiment XIII. (A. P.)

A male adult mouse, weighing 22.6 grams, was given food containing cysts of Lamblia of the Flanders strain. The patient from whom the strain was derived had never been abroad except with the Expeditionary Force in Flanders, and then only for a few weeks. The man had chronic diarrhoea, but on no occasion could any bacterial or protozoal infection other than Lamblia be demonstrated in him. This strain proved highly virulent to mice to which it was administered. In the present mouse no Lamblia were found until the third day, when the mouse passed loose faeces containing a few flagellate Lamblia. On the fourth day mucus and shed epithelial cells occurred in the faeces, and a few Lamblia cysts were found. The mucus in the faeces increased in amount on the fifth day, and a few more cysts appeared. The mouse showed distress from the fifth day. It shivered constantly, its coat was staring, and it showed incontinence of urine. On the seventh day the animal died.

At autopsy the body showed emaciation, the weight being 18.9 grams. The blood vessels of the stomach, intestine, and mesentery were engorged. The intestinal wall was thin, and a general inflammatory condition was present. Numerous flagellate Lamblia were present in the duodenum, but no cysts were found there. A similar condition prevailed in the jejunum. The caecum was thin-walled, gas was present in the proximal portion, but the appendix contained solid matter. Flagellate Lamblia were present in both the caecum and the colon. A few flagellates and some rounding forms, with a very few cysts, occurred in the rectum, which was thin-walled and inflamed. It is of interest to note that flagellate forms were predominant in this acute, rapidly fatal case, and that relatively few cysts were seen. Also, some of the flagellates were found still living and active in the duodenum two days after the death of the host.

Experiment XIV. (A. P.)

A male mouse, weight 19.6 grams, was given cysts of Lamblia with its food, the Flanders strain being employed. The faeces containing the cysts had been kept for some time prior to being used. The faeces of the mouse were examined daily for two months, but were negative. The mouse was then killed, and no parasites were found at *post-mortem* examination.

Experiment XV. (H. B. F.)

A female mouse, weight 25 grams, was fed with food containing Lamblia cysts of the Flanders strain. On the day following the infective feed an empty Lamblia cyst was found in a preparation of the faeces. On the third day two dying flagellate Lamblia were observed, and on the fourth and fifth days a single flagellate form was seen in each of the samples examined. The mouse voided diarrhoeic faeces on the ninth day. The anus was inflamed and the mouse began to shiver. A very few cysts and flagellate forms of Lamblia were present in the faeces. On the tenth day the shivering was more pronounced, the coat staring, and the anus inflamed. The animal was constipated. A few cysts and flagellates were seen. A similar condition prevailed on the eleventh day, while on the twelfth day the mouse was worse. On the fifteenth day the faeces were blood-streaked and contained Lamblia cysts. Dark-red, blood-streaked faeces were passed on the sixteenth and seventeenth days, and Lamblia cysts were fairly numerous. The shivering and trembling increased for a time, and then the mouse became almost moribund. It died on the eighteenth day after the infective feed. The mouse weighed 20 grams at death. The body was thin. No fat occurred anywhere. The blood vessels of the stomach, intestine, and mesentery were injected and the intestine was thin and inflamed. The caecum was collapsed at the appendix, but dilated at the ileo-caecal junction. No Lamblia were found in the oesophagus, and the cardiac end of the stomach was also free from parasites. However, a few Lamblia cysts, with very thin walls, were found at the pyloric end of the stomach. The proximal loop of the duodenum contained strings of mucus in which were shed epithelial cells and many flagellate Lamblia. Rather fewer motile parasites occurred in the distal loop. The jejunum contained numerous flagellates, and Lamblia in various stages of encystment were present in the ileum. At the dilated end of the caecum, near the ileo-caecal junction, a few cysts were found, and still fewer were present in the appendix. The rectum was almost empty, and very few cysts were present either in the rectum or in the faeces. Again, in this almost acute case, the flagellate form of the parasite was dominant.

Experiment XVI. (H. B. F.)

A large female mouse, weight 24.5 grams, was given food containing cysts from the mouse used in the previous experiment. On the fifth, seventh, eighth, and ninth days after feeding, the faeces contained a very few Lamblia cysts. Then no more cysts were voided, and no parasites were found in the diarrhoeic faeces produced by the administration of an aperient on the fifteenth day. A similar result was obtained on the twentieth day. When the mouse was killed, on the twenty-eighth day, no parasites were found and all the organs were normal. It had increased in weight by 3.6 grams.

Experiment XVII. (A. P.)

A male mouse, weight 18.4 grams, was fed on a piece of the intestine of the mouse infected in Experiment XIII. This material contained many active flagellates and only a few young cysts of Lamblia. On the third, fourth, fifth, and sixth days after the infective feed a very few Lamblia cysts were found in the faeces of the mouse. A few young flagellates were present on the tenth day, and also some cysts. From the twelfth to the sixteenth days no parasites were found in the faeces, but on the seventeenth day one flagellate and one cyst were present in a preparation. On the eighteenth and nineteenth days no Lamblia was found, and on the twentieth day one cyst only was found in the preparations of the faeces. On the twenty-third day a very few young flagellate Lamblia were recorded, but none were found in the faeces for some time after. The mouse was killed on the fortieth day after the infective feed, and then seemed normal. No parasites were found in it, so that a spontaneous cure of the weak infection may have occurred.

From our experiments it will be seen that *Giardia* (*Lamblia*) *intestinalis* of human origin has been shown to be pathogenic to rodents and to carnivores (kittens). It is, then, possible for such animals to serve as reservoirs of lambliasis, and by contaminating the food of man with their excrement to propagate lambliasis. We are of the opinion that sufficient notice has hardly been taken of the possibility or probability of rodents, such as rats and mice, acting as reservoirs of infection to man, and of carrying lamblial cysts to his food and abodes in the trenches in the fighting area. Mathis (1914) reported cases of lambliasis in Tonkin, wherein the houses of the patients were infested with rats and mice. Noc has reported similar cases. In the war zones where trenches are infested with these rodents it should be remembered that lambliasis may be thus spread, as was pointed out by us in 1915 and 1916. Kittens as pets should not be encouraged, as they may serve as carriers of infection.

Conclusions.

From our experiments and observations we conclude that:

1. *Giardia* (*Lamblia*) *intestinalis* is pathogenic to man and is capable of producing diarrhoea, which may be persistent or recurrent.

2. The virulence of the parasite varies, and lambliasis occurs in tropical and non-tropical countries. The Lamblia cysts can remain infective for some time.

3. Lambliasis occurs in rodents, especially rats and mice, and can be of human origin. The influence of rats and mice in the spread of lambliasis has been noted recently by Noc and by Mathis. Lambliasis may also be produced in cats. Lambliasis may be conveyed to man from these mammals.

4. As a result, rodents may be reservoirs of lambliasis, and on the western front this should be remembered, as we have already published.

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THROUGH the efforts of the American Hay Fever Prevention Association, supported by the Municipal Board of Health, the city of New Orleans recently passed an ordinance enjoining that the tenant or occupier of any leased or occupied premises, or the owner of vacant premises shall not allow weeds or grass over 2 ft. in height to grow on such premises, or weeds or grass over 1 ft. in height to grow on the sidewalk abutting on them, under a penalty of a fine not exceeding £5 or imprisonment up to thirty days, or both. A similar ordinance was made by the New York Board of Health last year.

BACILLARY DYSENTERY (SHIGA) CONTRACTED IN ENGLAND.

BY

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DYSENTERY in this country before the war, with the exception of a few isolated outbreaks, occurred in the form of asylum dysentery, and in those cases in which bacteriological examinations revealed the presence of dysentery bacilli the organisms were almost invariably of the mannite-fermenting (Flexner) type. References to the occurrence of cases caused by the Shiga bacillus are few. In 1904 Eyre[1] isolated the bacillus from six out of nine cases of acute asylum dysentery, and since then two sporadic cases have been described, one by Saundby and Hewetson in 1906,[2] and one by Saundby and Wynn in 1908.[3]

The following are the particulars of a case of dysentery caused by the Shiga bacillus, which was traced to contact with a convalescent soldier who was found to be excreting large numbers of the organism in his faeces.

Mother.

The patient, a woman aged 50, under the charge of Dr. May of Wakefield, to whom I am indebted for the particulars, was in her usual health up to February 11th, 1916, when she was attacked by symptoms of acute dysentery. The motions, which consisted chiefly of mucus and blood, were very frequent, sometimes numbering fourteen in the course of the night during the earlier stages of the illness, and were accompanied by marked tenesmus. There was a considerable degree of fever, and the patient showed a good deal of prostration. Previous to the onset of her illness the patient is said to have been liable to attacks of diarrhoea. At the time of the onset of the illness the patient's son, who had contracted dysentery at the Dardanelles, had been six days residing in the house, which is a small one, consisting of two living rooms and two bedrooms, with an outside closet, used, of course, in common by all members of the family.

A specimen of faeces from the patient was obtained by Dr. May on February 18th, and was examined on the same day. It was found to be very fluid, of a reddish colour due to admixture with blood, and contained a large quantity of slimy mucus and a few very small yellowish granules. On standing it separated into two layers, the upper being clear and watery and the lower containing the mucus. On microscopic examination the material was found to be composed almost entirely of pus and red blood corpuscles so far as cellular elements were concerned. No amœbae or flagellates could be found. Organisms were very scanty, and were seen mostly within the pus cells, some of which contained three or four Gram-negative bacilli.

Plate cultures were made on MacConkey's medium modified by the addition of crystal violet; after incubation for twenty-four hours numerous non-lactose fermenting colonies of a non-motile, Gram-negative bacillus, varying somewhat in length, but generally shorter and thicker than *B. typhosus*, developed. The organism produced acid but no gas in glucose, laevulose, galactose, and mannose, and no change in lactose, saccharose, dulcite, mannite, adonite, inulin, salacin, sorbite, raffinose, maltose, or glycerine. In litmus milk it produced a slightly acid reaction but no clot, and the acidity remained permanent, though it was slightly less marked at the end of seven days. It did not form indol in peptone water in seven days (Ehrlich's test), and did not liquefy gelatine. With dysentery (Shiga) serum it was distinctly agglutinated, but the limit of agglutination fell far short of the titre of the serum tested with a standard strain.

Son.

The patient's son, aged 22, was seen on February 19th by Dr. Gibson, M.O.H. Wakefield, who kindly furnished me with the following history: He was sent to the Dardanelles in September, 1915, where he was attacked with dysentery about the end of November. He was then removed to a hospital on one of the islands of the Eastern Mediterranean, and was afterwards sent home to England. He was admitted to hospital on January 8th, and discharged on February 5th, and returned to his home; six days after his arrival there his mother's illness commenced. He remained at home until February 14th, when he proceeded to a military rest camp. When seen by Dr. Gibson the man was not free from symptoms of dysentery, as he was still having frequent slimy motions, often containing blood, and there was a certain amount of tenesmus. His condition varied, but at times he had as many as three to four motions in quick succession, and observed that this was most liable to occur directly after meals.

A specimen of faeces was obtained by Dr. Gibson on February 20th, and was examined by me the same day. The specimen consisted partly of dark solid material and partly of thick blood-stained mucus, some of which was of a distinctly yellowish colour, and resembled thick tenacious pus. Microscopically, the mucous portion of the stool showed the same characters as in the case of the mother, except that organisms were present in very large numbers. Cultures were made from the mucus, and large numbers of organisms developed which gave the same cultural and agglutinating characters as the organism isolated from the mother.

Comparison of Strains.

The strains from both mother and son were compared as to their cultural characters, virulence, and agglutination with a standard strain of *B. dysenteriae* (Shiga) obtained from the Lister Institute, and also with a strain (*B. dysenteriae*, Shiga, M.) which I previously isolated from the faeces of an officer who had been in charge of cases of sickness on a transport returning from the Dardanelles, and who developed symptoms of dysentery just after his arrival in England. All four strains gave the same reactions in the carbohydrates already mentioned, produced no indol, and gave an acid reaction but no clotting in litmus milk. The only cultural difference noticed was that *B. dysenteriae* (Shiga, Lister Institute) did not grow so profusely on agar as the other strains.

The organisms were tested for virulence by the intraperitoneal inoculation of guinea-pigs of 350 grams weight with 1 c.cm. of a twenty-four hours broth culture of each bacillus. The organisms isolated from the patient and from her son caused death within twenty-four hours, *B. dysenteriae* (Shiga, M.) caused death in forty-eight hours, while *B. dysenteriae* (Shiga, Lister Institute) did not cause death in three days.

The agglutination reactions were tested with three dysentery (Shiga) serums: (1) Lister Institute serum; (2) a serum prepared by immunizing a guinea-pig with *B. dysenteriae* (Shiga, Lister Institute); and (3) Burroughs, Wellcome and Co.'s serum. The tests were performed macroscopically, and the results noted after two hours' incubation at 37° C. Controls were made in each case, and in most of the tests the tubes were again examined after standing twenty-four hours at room temperature to exclude the possibility of spontaneous agglutination. In the three recently isolated strains the agglutination limit was never higher than 1 in 200, and even with the standard strain the titre was only 1 in 800 to 1 in 1,600. It was noticed that in all cases the clumps were small and deposited slowly, in marked contrast to the large flocculent clumps characteristic of agglutination of the motile organisms of the typhoid-paratyphoid group with their corresponding serums. Ledingham, Penfold, and Woodcock[4] found that the strains isolated by them were all agglutinated in high dilutions (1 in 1,500 to 1 in 4,000) by the specific Shiga serum used, so that sharper results might have been obtained by more powerful serums. On the other hand, it may be remarked that the serum of Burroughs, Wellcome and Co. was stated to have a titre of 1 in 2,000 to 1 in 4,000 tested with five strains of living Shiga. Unless the serum had deteriorated to some extent since being tested, the results rather suggest that there is a certain specificity among Shiga strains.

The case is of considerable interest as it shows that the disease can be readily contracted under ordinary circumstances in England, although it is possible that in this instance the patient was rendered more susceptible owing to the fact that she was subject to attacks of diarrhoea prior to the onset of the dysentery.

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ON THE CURVE OF THE EPIDEMIC.

SUPPLEMENTARY NOTE.

BY JOHN BROWNLEE, M.D., D.SC.

IN the issue of the BRITISH MEDICAL JOURNAL of May 8th, 1915, I published a short note on possible epidemic forms. These were calculated on various hypotheses, but the only form which could be said to describe the course of an epidemic (Pearson's Type IV) was left completely unexplained. As this curve gives a fairly close fit to the majority of epidemics, no theory which does not account for its origin can be said to be of much practical importance. The form, however, immediately arises, if it be assumed that as the number of infecting centres increases there is more than an equivalent increase in the combined infecting power.

Curiously, though this idea was considered from time to time it was always rejected, why I cannot say. It seems, however, highly probable that such a phenomenon exists. Suppose an individual receive an amount of infection slightly smaller than is necessary to induce the disease. Suppose, also, a second infection is received within a certain time afterwards. There is probably a minimum interval within which two such infections can act together and produce the disease. Outside this interval escape will follow on both occasions. If such a condition exists it is obvious that in the presence of a large number of centres

of infection the chance of becoming infected must be larger in proportion to the number of centres than when the centres are more sparsely distributed. No direct measure of this is possible, but it may be assumed that as the death-rate in a population increases in proportion to a power of the density (Farr's law) a similar law will hold in this case. If, in other words, y be the number of infecting centres at any moment, the intensive power due to the increase in y may be represented by y^n, the number n being determined from the observations.

On the theory that the power of infectivity on the part of the organism decreases with time in a geometrical progression, or, in physico-chemical language, that the substance necessary to produce infection decreases in amount according to the law of the mono-molecular reaction, the infecting power at any moment is represented by the form

$$e^{a-bt}$$

Introducing the intensive factor by analogy with the corresponding equations of physical chemistry, of which a typical example is furnished by the influence of temperature on the rate at which a chemical reaction takes place, the infectivity at any moment is evidently

$$e^{y^n(a-bt)}$$

which by the process described in my previous note gives the epidemic equation:

$$\frac{1}{y}\frac{dy}{dt} = y^n(a-bt)$$

The solution of this takes the form:

$$y = \frac{m^m}{(c-at+\frac{1}{2}bt^2)^m}$$

where $m = \frac{1}{n}$ and c is a constant.

This is Pearson's Type IV.

Comparing this form with the observations, n is found to vary in value from 0.07 to 0.25, the commonest values being in the region of 0.14.

This form does not allow for asymmetry, but as very nearly symmetrical epidemics are most commonly found, the theory, so far, is in accordance with the facts. Asymmetry may, however, be introduced if it is assumed that the increase of concentration does not act exactly as just described, but rather in the manner represented by the expression $e^{a+y^n(a-bt)}$ which gives the epidemic form:

$$y = \frac{a^{2m}}{\left(ca^2 e^{-\frac{a}{m}t} + abt - bm - aa\right)^m}$$

This curve closely approaches the symmetric Type IV, as a becomes equal to zero.

An explanation of the epidemic form from the theory of physical chemistry is thus furnished. I do not for a moment think that the lack of susceptible persons may not in many cases tend to bring an epidemic to a more rapid close, nor that the form of the epidemic may not to a large extent be explained on the latter hypothesis, but I still adhere to my previously expressed opinion that the decline of an epidemic is much more likely due to the loss of infectivity on the part of the infecting agent.

The introduction of the idea that the power of infectivity is enhanced by concentration also explains the distribution of disease in space. When such a chart as that issued in the report of the Metropolitan Asylums Board for the year 1902 regarding the distribution of small-pox in London in the great epidemic of 1901 is examined it is found that instead of the cases being distributed according to a normal surface, as seems *a priori* probable, the distribution is again that of Type IV. The same distribution in space has been found for many other epidemics, and is now for the first time explained.

WITH the opening of the September term a fund of £200,000 from various donations will be available for use by the Washington University Medical School. This will enable the school to create full-time appointments for teaching and research work in medicine and paediatrics.

ON THE IMPORTANCE OF TECHNICAL DETAILS IN THE PREPARATION OF A TRANSPARENT BLOOD-AGAR FOR THE CULTIVATION OF THE MENINGOCOCCUS.

BY DOROTHY JORDAN LLOYD,
"N" FELLOW OF NEWNHAM COLLEGE.

(Report to the Medical Research Committee from the Biochemical Laboratory, Cambridge.)

THE meningococcus needs for its metabolism (*a*) some digested protein, and (*b*) a comparatively high concentration of the vitamines or accessory growth hormones whose importance in metabolism is beginning to receive general recognition. The former may be supplied by a tryptic digest of bullock's heart; the latter may be supplied, as has long been known, by the addition of a small quantity of blood to the medium.

The tryptic heart digest is made according to the method of Douglas.[1] To use it as a medium for the meningococcus, powdered agar is added to 2 per cent. of the digest, and the mixture is steamed and filtered. After the final filtration, the reaction of the medium is adjusted, and defibrinated bullock's blood is added to 5 per cent. The medium is now cloudy. The method of clearing is important.

1. The melted tryptic blood-agar is placed in the steamer for from thirty minutes to one hour in order to coagulate proteins of the blood. These are thrown down as a spongy dark-brown clot.
2. The melted agar is cleared by centrifuging for ten minutes at a speed of 3,000 revolutions a minute. The vessels of the centrifuge should be made hot before use, to prevent the setting of the agar.
3. The clear fluid is poured off, and should be tubed and sterilized at 100° C. for three successive days according to the usual routine method.

Should the centrifuging of large quantities be difficult, the clear medium can be obtained by the use of a siphon. In this method the fluid should be transferred to an Erlenmeyer flask. It should be steamed for an hour, and then allowed to settle, and this process can be repeated a second or third time if necessary, in order to render the clot sufficiently compact to permit the use of the siphon in drawing off the clear supernatant fluid.

It is important to add the blood after the agar, and the medium must on no account be filtered after the blood has been added. This fact is the essential point of the present communication. Filtration either through a Chardin filter paper, or through paper pulp on a Buchner funnel removes the essential vitamines at the same time as it removes the undesirable sediment. This is probably an adsorption phenomenon.

Tryptic blood-agar made transparent by the above method has been found to be highly satisfactory for obtaining both primary and secondary cultures of the meningococcus. It is equally effective for both spinal fluid and throat strains. Moreover, the viability of cultures grown on it is good, three weeks being about a minimum duration if the inoculated slopes are kept in a moist incubator.

Table showing the Difference obtained according to whether a Dilute Emulsion of the Meningococcus in Ringer Solution is Sown on the Centrifuged or on the Filtered Media.

Medium.	Meningococcus Strain:			
	H. Spinal fluid used.)	P.	G.	Bl.
Tryptic heart-agar (Douglas)	0	0	0	0
Ditto + blood cleared by centrifuging	+	+	+	+
Ditto + blood cleared by passing through Chardin filter	0	0	0	0
Ditto + blood cleared by filtering through paper pulp on Buchner funnel	0	0	0	0

This medium does not lose its properties after sterilization at 100° C. When tubed, it remains unaltered for a considerable time.

The full account of the researches on which the fore-

going statements are based will be published shortly. It is hoped to test the efficiency of the medium for other pathogenic organisms.

REFERENCE.

1 *Lancet*, October 10th, 1914.

THE DURATION OF BILHARZIOSIS IN SOUTH AFRICA.

BY F. G. CAWSTON, M.B., B.C.CANTAB.,
PIETERMARITZBURG, NATAL.

JUDGING from the number of men who were infected with bilharziosis during the South African war, and the number of these who are still receiving compensation from the army authorities, the study of the duration of the South African form of bilharziosis is of great importance. The disease, as met with in German East Africa, is as persistent as in Natal. At one time bilharziosis was very prevalent amongst the natives there, and in some parts of the country two out of every three of the male population were infected. The disease attacked the female population to a lesser degree.

The vast majority of persons in Natal who suffered from the affection some twenty or thirty years ago have by this time entirely grown out of the symptoms and, in a large number of these cases, microscopic examination of the urine shows no evidence of the past affection. On these grounds a life insurance society can be recommended to accept an otherwise suitable applicant at the usual rates, even though he has a past record of bilharziosis, provided the urine has shown no sign of blood or mucus for one year and has not contained any of the eggs for six months, so far as can be judged from occasional microscopic examination of the urine.

A number of those who contracted the disease some twenty or thirty years ago have suffered continually from its symptoms ever since, though they have not been sufficiently severe for them to undergo continuous medical treatment. Recently I met a gentleman who has suffered from this form of haematuria for the past thirty years; occasional treatment had improved his condition, but it has never cured him. Three children of his—two boys and a girl—suffer from the same symptoms. The relation of puberty to this complaint is a fanciful view of the past. It should be placed in the same category as that of urethral infection. Some patients have attributed their cure to various medicinal remedies, and have great faith in their efficacy; but it would seem that diuretics and urinary antiseptics are the only drugs on which much reliance can be placed.

It is probable that, from time to time, the worms produce an exceptionally large number of eggs, which would account for the occasional aggravation of the symptoms, and that, sooner or later, they die out in the blood stream. Even after the worms themselves are dead, there are numerous eggs still present in a badly infected case, and it is uncertain whether these eggs ever entirely disappear from the human body. The remains of dead ova have been found in the kidney substance, in the bladder walls, and in minute calcified nodules in the lungs. Such objects would presumably never quit the body.

The following instructive case, for the details of which I am indebted to Dr. James Petrie, of Zululand, subsequently proved fatal:

CASE I.

Some years ago in Natal a European boy was infected with bilharziosis, but did not suffer much inconvenience from it. Then he went to study in Sweden and, after two or three years in that country, began to suffer so much that he was compelled to undergo treatment. Finally, he was taken to hospital, where he died from the effects of the disease. He was about 20 years of age when he died. Two adult worms were found at the *post-mortem* examination, one was alive and the other dead.

CASE II.

On August 9th, 1915, I examined for life insurance an applicant whose case I was obliged to postpone on account of slight albuminuria. A further examination of the urine in September indicated some bladder or kidney abnormality. Early in October he was mentioned to me as one of many in this part of Natal who had suffered severely from bilharziosis; it was attributed to swimming in the Umsindusi River, and had troubled him for a long time. On March 15th, 1916, he came up again for a fresh medical examination. On this occasion he told me that he had suffered from haematuria in the past; but that, as he had not noticed it for ten years, he considered that he was cured. Occasionally, however, he complained of pains in the back, which could only be relieved by hot baths and rest. Presumably these were attacks of renal colic, which is a fairly common sequela, even where there is no renal calculus. Examination of the cloudy urine which he passed on this occasion revealed the presence of shreds of bladder mucous membrane and a number of ova containing miracidia.

It would be of service if practitioners would submit to microscopic examination the urine of persons who are said to have been cured of this affection before placing too much reliance on the remedies that have been recommended. Even if some be effective in destroying the parasites in the blood stream and in diminishing the haematuria, the escape of the spine-pointed eggs which continues is too frequently associated with bacilluria and damage to the bladder wall to enable one to pronounce such a case as cured, even though it is most exceptional to hear of cases which have died or whose lives have been shortened by bilharziosis in South Africa.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CLINICAL RESULTS OBTAINED WITH THE TUNGSTEN LAMP.

THE bactericidal powers of ultra-violet rays are well known, and those emitted by the quartz mercury vapour lamp have been used for the sterilization of water. Though the penetrative power of the rays is very low, their action is rapid, so that by causing them to act on a thin film of quickly flowing water even large water supplies can be dealt with. Ultra-violet rays have also been used a good deal recently in therapeutics, but the manner in which the improvement, which undoubtedly in some cases follows their employment, is brought about has not yet been fully explained. The quartz mercury vapour lamp has commonly been used for the purpose, but it has recently been pointed out that tungsten electrodes give out a very large quantity of ultra-violet rays. The physics of the matter was discussed by Dr. Sidney Russ, physicist to the Middlesex Hospital, in this JOURNAL in a paper illustrated by some instructive spectrograms (January 22nd, 1916, p. 124).

Tungsten is at the present time difficult to procure, and in the lamp I used (Simpson's) for the past five months was replaced by its ore, wolfram. I am indebted to Lieutenant-Colonel Bruce-Porter, R.A.M.C.(T.), Officer Commanding No. 3 General Hospital, Wandsworth, for permitting me to instal an apparatus in that hospital, and to Captain Humphris, R.A.M.C.(T.), in charge of the x-ray department, for much valuable assistance.

The apparatus consists of a lamp mounted on a portable stand, adjusted so that the light can be directed where desired, a switchboard with switch, ampère-meter, fuses and resistances for lowering the voltage and ampèrage of the main to a suitable value—about 5 ampères at a voltage of 40 to 60. The electrodes, consisting chiefly of wolfram (tungsten of iron and magnesia) are fixed in clip-holders and are easily adjusted by a hand-screw.

The light is supplied at a distance of 10 to 15 in. either as "open arc" or "focussed arc," the former when treating large surfaces, the latter for smaller areas, or where more intense treatment is considered necessary. The first exposure should be one minute, as the reaction differs considerably in different cases, and can be afterwards increased to two or even five minutes. It varies from slight irritation to considerable erythema and desquamation, and is not usually seen until four or five hours after exposure. The treatment should not be repeated until the reaction of the previous exposure has passed off. If the reaction is sufficiently severe it can be treated with boracic powder or olive oil, and soon disappears. The light is not only very rich in ultra-violet rays, but contains also rays of shorter wave length than the light from a carbon arc. As the light is very dazzling, the patient's eyes should always be protected by a dark bandage, and the operator should wear lead blue glasses, as the light may cause conjunctivitis.

I especially desired to try the curative effects of the light on sinuses and the indolent ulcers left after "frost-bite"

or other severe injury to the tissues which have defied most methods of treatment. These have invariably improved, and rapidly in many cases. Stiffness, oedema, and pain have also disappeared. I have given as many as twenty sittings to some of the patients before getting the result desired.

Cases of lupus and tuberculous ulceration also healed. I treated several cases of chancre; one phagedenic ulcer which threatened to destroy the glans not only ceased to extend, but the gap already existing in the glans filled up completely. An old severe injury to the hand and fingers which resulted in stiffness, loss of movement, pain, and wasting, has improved greatly after twelve treatments. In addition to the above I have treated two cases of hay asthma, both of which obtained immediate relief.

I feel satisfied that most of the wounds I have treated would have yielded to other methods; some of them I am equally sure would not have healed as rapidly, and in no case would the resulting scar tissue have resembled normal skin so closely. For these reasons I consider the tungsten lamp a valuable addition to our methods of treatment; the short time necessary for a treatment—two minutes—is also a great advantage in these days of pressure.

A. B. COTTELL,
London, W. Lieutenant-Colonel R.A.M.C. (ret.).

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

THE NORTH RIDING INFIRMARY, MIDDLESBROUGH.

SYMPATHETIC OPHTHALMIA UNSUCCESSFULLY TREATED WITH ORGANIC ARSENIC COMPOUNDS.

(By G. VICTOR MILLER, M.D., Honorary Ophthalmic and Aural Surgeon, Middlesbrough and Stockton Hospitals.)

M. W. R., 49, a steel roller, on December 10th, 1915, fell in the street and struck his right eye on the kerb. His doctor put drops in the eye. At the beginning of February, 1916, he came to the out-patient department of the North Riding Infirmary. The eye was washed with mercury perchloride lotion, and he was given boric lotion to use frequently at home. On February 5th he was seen by me, and on February 6th was admitted to the institution.

Condition on Admission.—The sclerotic of the right eye was ruptured in the usual site, above and to the inner side of the cornea. These ruptures are usually subconjunctival, but over one part of the rupture in this case the conjunctiva seemed to have been torn across, and on the inner side of the cornea the root of the iris and the ciliary body were exposed. The left eye showed a good deal of circumcorneal injection and photophobia, and there appeared to be definite iritis, though the pupil dilated fairly readily to atropine. I diagnosed commencing sympathetic ophthalmia, and on February 8th the injured eye was enucleated. The patient was put to bed between blankets, atropine drops were instilled four times daily, and 1 grain of grey powder given internally thrice daily. The condition of the eye got worse and the mydriatic instillations were increased in frequency.

As salvarsan has been highly recommended for sympathetic inflammation, an injection of Allen and Hanburys' hyposol was given on February 18th. This is an oily emulsion of kharsivan and is injected into the muscles of the buttock. The patient received 0.6 gram kharsivan. This was followed up with grey powder and half-drachm doses of sodium salicylate at night, with fairly frequent hot baths. On March 7th the hyposol injection was repeated, and again on April 4th. During this time the amount of redness varied; occasionally the eye seemed distinctly improved. One noticeable feature was that the iris never seemed to lose its gloss, though it was observed there was increasing difficulty in keeping the pupil dilated. The administration of grey powder was continued and 2 drops of atropine and 2 drops of cocaine instilled every two hours and sometimes every hour during the day. In spite of this, the pupil got smaller, and there was a suspicion of commencing adhesions, with exudation into the pupil.

On the morning of April 28th an intravenous injection of galyl (0.3 gram) was given into the right median basilic vein. The patient had a sudden attack of syncope, and was apparently dying; the temperature was 101°, the pulse 124 and very feeble, the respirations 24. Later in the day he was semi-delirious, very noisy, and restless. By the next day he was much better and on April 30th practically normal. It was noted that the galyl did not seem to dissolve very readily. He was also allowed to have his dinner soon after the injection. On May 10th he was given intravenously 0.4 gram of galyl and was allowed no solid food for nearly four hours. No improvement in the eye condition ensued; the pupil margin was adherent, and there was distinct exudation into the pupil. Medicines and mydriatics seemed to have no effect. He was given grey powder gr. j three, and cocaine drops four, times daily. He was discharged from the institution on May 16th.

The result in this case does not appear to confirm the optimistic views as to the results of the use of arsenic compounds in the treatment of sympathetic ophthalmia, but it may be that the treatment was commenced too late, and perhaps the injection of hyposol is not so efficient as an intravenous injection. After the second intravenous injection the patient was allowed no solid food for nearly four hours.

He was seen on June 17th. The eye was very injected, the iris much infiltrated with inflammatory products and altered in colour; the pupil was occluded and excluded; iris bombé. Vision amounted to distinguishing light from darkness.

Reports of Societies.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.

THE seventh annual meeting of the Oxford Ophthalmological Congress was held on July 13th and 14th. The Deputy Master, Captain P. H. ADAMS, R.A.M.C.(T.), who presided, in the address of welcome expressed the deepest regret at the absence of the Master, and telegrams of regret were dispatched to him and to the Past Master, Mr. Robert W. Doyne. The discussion on "The relationship of ophthalmology to general medicine" was opened in the morning by Sir WILLIAM OSLER, who dealt with the subject clinically, and in the afternoon by Sir ANDERSON CRITCHETT, who treated it from a general reminiscent point of view. On the morning of the second day Lieutenant-Colonel ELLIOT read a paper on the treatment of ophthalmic diseases by indigenous methods in India. Mr. STEPHEN MAYOU showed slides of orbital tumours, and Mr. HARRISON BUTLER spoke on spring catarrh, illustrating his remarks by lantern pictures, and on results of squint operations. The address by the Master on "The diagnostic value of tubercle of the choroid" was read in his absence. A resolution to the effect that the Congress was of opinion that "all workers exposed to danger from flying particles, with especial reference to those engaged in munition factories, should be provided with and encouraged to wear suitable protective goggles" was passed unanimously. The afternoon was spent at the Eye Hospital, where interesting cases were shown. The scientific proceedings concluded with a demonstration at the Ratcliffe Infirmary by Major TURRELL, R.A.M.C.(T.), on the electrical treatment of warts and naevi. The scientific museum, which was open throughout the meeting, included a valuable collection of paintings illustrative of tubercle of the choroid by Mr. Sydney Stephenson, and of fundus conditions in various diseases by Mr. A. J. Ballantyne. The commercial museum afforded good opportunity to examine new apparatus and instruments.

TREATMENT OF VENEREAL DISEASE.

AT a meeting of the Association of Registered Medical Women on July 11th, when Dr. HELEN BOYLE was in the chair, a discussion on the report of the Royal Commission on Venereal Diseases was resumed. Dr. ETHEL BENTHAM said that the recommendation to throw treatment into the

hands of a limited number of specialists was a mistake. The establishment of special centres open in the evenings where every ailment could be treated would be useful and would remove notoriety from venereal cases. Dr. MARY SCHARLIEB agreed that the disease was too widespread to be treated only by specialists. The idea of offering free treatment at hospitals and approved centres was not only to cure the sick but to afford experience to practitioners. Dr. LETITIA FAIRFIELD suggested that salvarsan might be administered by practitioners recognized by the Local Government Board. In New Zealand it had been found that if treatment were given free the patients attended very irregularly. The disability for sickness benefit under the Insurance Act must be removed, and as this would be financially impossible, treatment would have to be given at hospitals. Lady BARRETT said that evening clinics for venereal disease alone would defeat their own end. In general clinics it would not be so difficult to make patients attend; the patients would be treated all alike, no questions need be asked, and treatment would be free for all diseases. Dr. MORNA RAWLINS said that at the Lock Hospital the in-patients used to run away, but the out-patients were very regular in attendance. Dr. MARY SCHARLIEB suggested that the discussion should be continued in November after the publication of Dr. Newsholme's report.

Reviews.

TUBERCULOSIS.

AFTER many years devoted to the study of tuberculosis of the lungs and pleura, Professor LETULLE,[1] of the Paris Faculty of Medicine, has recently published a massive and magnificently illustrated manual of their pathological anatomy and histology. His book, he claims, is in reality an atlas of tuberculosis, containing 107 plates with photographs taken by the Lumière three-colour process. The plates are autochromes, and Professor Letulle is justified in stating that such reproductions are more faithful to nature than the coloured paintings produced by the best pathological artists can ever hope to be. The book contains seven chapters. The first deals with miliary tubercle, or follicular tuberculosis; the miliary tubercle being actually built up of confluent primary tuberculous follicles surrounding a more or less central area of caseation. The second chapter gives an account of nodular tuberculosis of the lungs, where the infection is by way of the bronchi rather than the blood stream; these nodules are very much larger than miliary tubercles, and further tend to become encysted. The third chapter contains a full account of the macroscopic and microscopic changes found in tuberculous pneumonia and bronchopneumonia, with the caseous lesions that may either become encysted or break down into cavities; a special account of the "tuberculous splenization" of the lung that may follow this bronchopneumonia is given. The splenization is preceded by a "vitrifying necrosis" in the pulmonary alveoli, decribed by Laënnec as a "gelatiniform infiltration." The fourth chapter is devoted to a description of tuberculous cavities in the lungs; the fifth chapter, with the last twenty-eight of the plates, contains an account of the pleurisy that is so common, in one form or another, in phthisis. Two brief chapters at the end of the volume are occupied with an account of the sequelae of pleural and pulmonary tuberculosis, and a general discussion of the pathogenesis of the disease. The general arrangement of the book is excellent. Each of the first five chapters is followed by a series of illustrative coloured plates. Each plate is preceded by a page or so of discussion and explanation of the points it is designed to illuminate, and has superposed on it a lettered sheet of tissue paper with lines to indicate the particular histological details in the underlying plate to which attention is specially directed. Many of the plates are life-sized photographic reproductions in natural colours; others are photomicrographs of stained sections, with magnifications up to 900 diameters, the stains used being haematin, eosin, and orcein for the most part. All but one of the plates in the copy now before us are accurately registered, so far as the three colours (red, yellow, and blue) employed are concerned. The author, the photographer and the printer are all to be congratulated upon the success with which they have contributed their share towards the production of this handsome volume. It should be in the hands of all pathologists, and will be read and consulted with great interest by all medical men who are interested in the pathogenesis of phthisis. In addition to its other merits, it possesses a good alphabetical index of its contents—a virtue still, alas! too rare in French scientific works.

[1] *La Tuberculose pleuro-pulmonaire.* Par M. Letulle de l'Académie de Médecine, Professeur à la Faculté de Médecine de Paris. Paris: A. Maloine et Fils. 1916. (Imp. 8vo, pp. 376; 107 plates.)

Dr. WILLIAM BARR, district tuberculosis officer for the West Riding of Yorkshire, has written an excellent account of his use of Spengler's I.K. tuberculin in the treatment of pulmonary consumption.[2] There are very many forms of tuberculin on the market, and I.K. is one of those that has not received much attention from medical men in this country. Dr. Barr has obtained excellent results from its use; he does not place absolute reliance upon it, and in his own work he uses tuberculin (variety not mentioned) almost as extensively. His work, as he says, has been purely clinical, and he gives a tabulated account of his use of I.K. in 47 cases treated since October, 1913. He is satisfied with the results obtained, and he notes that the patients appreciate the treatment. Full details of the way in which it is carried out are given, and its contra-indications and the troubles to which it may give rise are considered in detail. The book is one that should be read by all medical men who have to do with the treatment of tuberculosis of the lungs.

GRANULOMA VENEREUM.

VENEREAL granuloma is a chronic infection of the skin about the genital organs occurring in tropical and sub-tropical countries. An excellent account of its occurrence in Brazil, Uruguay, and Argentina has recently been published by Dr. H. C. DE SOUZA ARAUJO in the form of an inaugural thesis presented to the Rio de Janeiro Faculty of Medicine.[3] This author attributes the disease to the *Calymmatobacterium granulomatis*, a specific bacterium found both inside and outside the granulomatous cells of the affected part, in sections coloured with Giemsa's stain. The incubation period of the disease is unknown. The onset is insidious, a local papule appearing and spreading slowly with itching, pustulation, and ulceration in the cutaneous tissues; the general health is unaffected at first. Later, when the diseased area is larger and the ulceration has become extensive, the patient becomes cachectic; this is a matter of years, and death follows from wasting or from intercurrent disease if the condition is left untreated. It is only in exceptional instances that any area of skin except that in the neighbourhood of the genital organs is affected. It is characteristic of the lesions that their edges should thicken and tend to cicatrize in places while spreading in others; the cicatrices so formed often break down again spontaneously. The causative organism does not invade either the subcutaneous connective tissue or the lymphatic system unless syphilitic infection also is present. The hypertrophic papules and condylomas to which it gives rise in the skin are red or crimson in colour, bleed readily, and under the microscope show neither giant cells nor degenerative changes. When ulcerated the granulomatous surface secretes a highly offensive clear fluid of characteristic odour. The initial lesion is either a vesicle, a papule, or a nodule, an ulcer forming within a month. The infection spreads by continuity or by contact to the adjoining parts in the course of years. One of Dr. de Souza Araujo's patients dying of the cachexia produced by very extensive ulceration gave a history of fourteen years. The disease is habitually transmitted by coitus, a fact indicating the localities most often affected by the initial lesion. Secondary infection of the ulcerated surface may give rise to lymphangitis and elephantiasis on the one hand, and on the other to deep excavation of the

[2] *I.K. Therapy (Immunkörper, Immune Substances) in Pulmonary Tuberculosis.* By W. Barr, M.D., D.Sc.Glas., D.P.H.Camb. Bristol: J. Wright and Sons, Limited; London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited. 1916. (Demy 8vo, pp. 82; 42 charts. 3s. 6d. net.)

[3] *Estudo clinico do granuloma venéreo.* Trabalho do Instituto Oswaldo Cruz. These apresentada á Faculdade de Medicina do Rio de Janeiro por H. C. de Souza Araujo, natural do estado do Paraná, filho legitimo de J. C. de Souza Araujo e de D. Manoela A. d'Araujo. Rio de Janeiro: Typ. de Jornel do Commercio, de Rodrigues and Co., 1915. (Imp. 8vo, pp. 123; 12 figures.)

tissues and the formation of rectal, vesical, or urethral fistulas, or even to perforation into the peritoneal cavity. Cases have been recorded in which the infection has been transmitted by the use of unsterilized surgical instruments.

The author makes numerous quotations from the literature of the subject to illustrate the views that have been held as to its etiology. From the clinical point of view he groups his cases into two main classes, the ulcerating and the hypertrophic, with subdivisions according as the lesions are serpiginous, fungating, or papillomatous. The clinical diagnosis rests on the presence of the chronic indolent hypertrophic or ulcerated granuloma, with elevated margins, characteristic secretion, and readiness to bleed on injury. The diagnosis can easily be confirmed by the microscope. Part of the granuloma is curetted off, fixed in alcohol or by heat, and coloured with Giemsa's stain, when it will show the specific bacterium. This test serves to distinguish granuloma venereum, or ulcerating granuloma of the pudenda, from such affections as syphilis, soft sore, framboesia, leprosy, and such diseases as actinomycosis, blastomycosis, sporotrichosis, mycetoma, and the like. It is to be regretted that the author gives no account of the appearance or cultural characteristics of the specific organism *Calymmatobacterium granulomatis* in his thesis; this microbe, discovered in 1912 by Aragao and Vianna at Rio de Janeiro, appears to be unknown to many recent standard textbooks of bacteriology.

The prognosis is good if the case comes under treatment early; the infection can be cured in all but the most advanced cases, but if there has been much ulceration and loss of tissue, it is natural that a great deal of scarring and deformity should be left behind. Treatments by local applications, surgery, salvarsan, and vaccines, have always proved disappointing. But, arguing from the success obtained by intravenous injections of tartar emetic in leishmaniosis of the skin, Vianna and Aragao employed it in venereal granuloma, and met with striking success. From 5 to 12 c.cm. of a sterile one per cent. solution of tartar emetic are given intravenously on alternate days; after about twenty injections have been administered the treatment is suspended for a week or two, and then repeated. Dr. de Souza Araujo or his colleagues have used this method in 25 cases, with 3 relapses; two patients, old and grave cases, died. He adds that some good results have also been obtained by *x*-ray treatment. Details of 34 cases of the disease are given in the thesis, and there is a bibliography of the subject.

A DESK DICTIONARY.

THE third edition of Gould's *Practitioner's Medical Dictionary*, revised and enlarged by Dr. R. J. E. SCOTT,[4] contains about twice as many definitions as Gould's *Pocket Medical Dictionary*, but though very full it is compact, and the text, which has been brought well up to date, provides explanations of almost all the strange terms the sorely tried reader of modern medical literature is likely to meet. It contains, in addition to the many obscure and superfluous terms invented by physicians, surgeons, pathologists, and bacteriologists to darken knowledge, many of the trade names applied to numerous drugs, chemical products, and the like, that are in common usage. There are a few misprints or errors in the spelling, derivations, and chemical formulae given, but not many. The only word for which we have looked in vain in this dictionary is Professor Crile's new portmanteau word "anociation," with which he now replaces the more familiar term "anoci-association." The book is well printed, and may be warmly recommended to the attention of medical students and medical men in search of a good dictionary of modern medical terms.

NOTES ON BOOKS.

VOLUME III of the *British Journal of Surgery*,[5] covering the period from July, 1915, to April, 1916, has recently been issued. This journal has been remarkable for the excellence of its illustrations, and those in the present volume form no exception. Some of them are in colours, others are in half-tones, and others are from drawings. Every one will have his own opinion of the relative merits of the two last named, but to show certain conditions coloured plates are a great advantage, as is well exemplified by those with which the report on cases of gas poisoning among British troops, by Colonel Sir John Rose Bradford and Captain T. R. Elliott, are illustrated. Though many of the papers in the volume are concerned with military surgery a large proportion deal with general subjects. In addition to the technical pictures to which we have referred, each number contains a portrait; those in this volume are of Guthrie, Cheselden, Wiseman, and John Moyle, a sea-chirurgeon of the eighteenth century. We may take this opportunity of mentioning that the new number of this journal—that for July—contains excellent portraits of Sir Charles Ball and Professor A. E. J. Barker, accompanied by sympathetic memorial notices.

[4] *The Practitioner's Medical Dictionary*. By G. M. Gould, A.M., M.D. Third edition, revised and enlarged by R. J. E. Scott, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine. London: H. K. Lewis and Co., Limited. 1916. (Demy 8vo, pp. 970; illustrated. 17s. net.)

[5] Bristol: John Wright and Sons. (30s. net.)

MEDICINAL AND DIETETIC PREPARATIONS.

A New Intestinal Antiseptic.

FIVE months ago we published a note on a new intestinal antiseptic, "trimethol" by name, recommended to the members of a Connecticut medical society by Dr. J. T. Ainslie Walker. Trimethol is a benzene derivative, $C_6H(CH_3)_3(OCH_3)OH$, a trimethylmethoxyphenol, put up in the form of a 50 per cent. gelatine emulsion. It is stated to have a Rideal-Walker coefficient of 20, and to pass unchanged through the intestine; hence it is recommended in such conditions as offensive diarrhoea, enteritis, ulcerative enteritis, mucous colitis, and the like. It may be obtained, we hear, from Messrs. John Bell and Croyden, Ltd., 50, Wigmore Street, W.

Chlorinated Dusting Powders.

The object with which the chlorinated powder eupad was introduced was to secure the necessary antiseptic effect with a minimum of local irritation. Professor Lorrain Smith and his colleagues, in their original communication (BRITISH MEDICAL JOURNAL, 1915, vol. ii, p. 129), acknowledged that pain and irritation might be caused by eupad, which consists of equal parts of chlorinated lime and boric acid. Major Don (BRITISH MEDICAL JOURNAL, 1916, vol. i, p. 643) also mentioned that pain might be caused by the employment of eupad. There are two methods of using a powder of this kind: (1) as a dusting powder to septic sores; (2) by placing a suitable quantity between folds of muslin or lint moistened with water as a dressing. So far as the first method is concerned, it would appear probable that by the use of a diluted powder results as useful would be obtained as with a more potent application, for example, one containing 50 per cent. of chloride of lime, while the risk of causing pain would be diminished. With regard to the second method, which relies on the gases emitted by such mixtures, chlorine is so active a bactericide that a milder preparation, while less caustic, might probably be equally efficacious. Moved by these considerations the firm of W. Martindale (10, New Cavendish Street, London, W.) has produced under the name "kepad," a light flocculent chlorinated dusting powder, composed of chlorinated lime, boric acid and kieselguhr, the latter sterilized by heat. The strength which it is believed will be most generally useful contains 0.5 per cent. of available chlorine, which is equivalent to 1.5 per cent. chlorinated lime or 0.75 per cent. of hypochlorous acid. Kepad containing 5 and 10 per cent. or more of chlorinated lime can be prepared when stronger preparations are required.

Sterile Catgut.

Attention was called a short time ago (JOURNAL, June 3rd, p. 800) to a discussion raised at the Académie de Médecine by M. Quénu, when a series of resolutions containing instructions for the manufacture of catgut and its sterilization were adopted. Messrs. G. F. Merson (Meuse Lane, South St. Andrew Street, Edinburgh) have prepared a surgical catgut in a manner which, we understand, fulfils the required conditions. We believe the result of independent bacteriological examination has been very favourable, and hope to publish a note upon this aspect of the subject in a subsequent issue.

THE remains of Metchnikoff were cremated at Père-la-Chaise, and the ashes have been deposited in the Pasteur Institute.

DR. HERMANN M. BIGGS, Health Commissioner of New York, has organized a systematic effort to combat the epidemic of infantile paralysis now prevalent in that city and outlying districts. Up to July 5th 600 cases had been reported with a mortality of 25 per cent. Letters are being sent to all practitioners in the State, and local health officers are instructed to report by telegraph every suspected case, and to enforce the strictest quarantine. The department of health has enlisted the aid of two large insurance offices in the distribution of warning leaflets. The department of licences has notified all moving picture theatres in the city not to admit children under 16 until such time as the Board of Health declares that the menace is at an end.

THE WORK OF THE NATIONAL ASSOCIATION FOR THE PREVENTION OF CONSUMPTION.

THE seventeenth annual general meeting of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis was held at 20, Hanover Square, London, on July 26th. The council was able to report that although checked in its onward progress the association has not been less vigorous in its efforts to spread knowledge of the disease and the means whereby it is hoped it may be stamped out. One important step taken during the year was the publication of the *Handbook of Tuberculosis Schemes*, of which we gave some account in the JOURNAL of April 29th, p. 626. It was very carefully compiled, and it contains the latest information as to existing institutions and of the work they are doing. It will doubtless serve a double purpose as an index of work in progress and as a stimulus to the prosecution of similar work elsewhere. Incidentally it may be said to point to a great need for further extension of the campaign. In the northern counties of England the local associations that have been formed would appear to be making vigorous progress by way of the establishment of tuberculosis dispensaries, the provision of sanatorium accommodation, and by home visitation and after-care. In the southern counties this vigour is by no means so clearly evident, and a few only of the Scottish counties are able to record activity, but since the care of the consumptive has become more and more a matter for local or municipal authority, the aid of the association has been less in demand. The prime object in the preliminary stages of the campaign is to educate the public and so to smooth the way for ultimate legislation. The assistance of friendly societies and insurance committees and companies—notably the Prudential Assurance Company—has been freely invoked, and a vast amount of literature has been circulated through the channels they provide.

The annual report contained an interesting account of the results achieved by the caravan tours through various districts and towns, both in the north and the south. Real interest has been aroused, especially among school children, due no doubt to the convincing way in which the plain facts have been put before them in language that they could understand. The National Association has been active in the interests of the tuberculous soldier, to secure fair treatment for him on or before discharge. Much has been done to provide appropriate treatment for such cases, but, in spite of official denials, their number is said far to exceed the available resources. A strong representation has been made to the War Office authorities with a view to postponing discharge from the army on account of tuberculosis until after a period of treatment has been tried. Immediate discharge involves loss of the separation allowance just at the time when it is most wanted, but there is reason to believe that the proposition for postponement will be favourably entertained. With a view to the prevention of enlistment of persons suffering from latent tuberculosis, a system of notification by medical officers of health of all persons of military age has been started, and should have the result of greatly reducing the number of actual or potential consumptives in the army.

Thus it will be seen that the steady perseverance in its chosen line of action is enabling the National Association to penetrate with each succeeding year deeper and deeper into the recesses of ordinary life and to force into prominence the knowledge of the disease in its less obvious forms, and to bring the public mind into touch with commonsense methods of dealing with it in all its stages. For this work, as for so many other phases of philanthropic effort, there is constant need for money. The national importance of the crusade against tuberculosis must be still more widely recognized, and far more liberally supported, if a real annihilating victory is to be achieved.

After the adoption of the annual report, Sir WILLIAM OSLER read a paper on the tuberculous soldier. He suggested (1) that searching examination should be made of recruits, doubtful cases being referred to the tuberculosis expert of the district; (2) that army experts should decide on doubtful cases before discharge; and (3) that a national organization should look after the welfare of the tuberculous soldier, with subsidiary branches in each county, and that this work should be done in co-operation with societies for the after-care of soldiers and sailors. Mr. H. J. TENNANT said that the War Office had now decided that men who had joined the army and were discovered to be tuberculous were to be given part of the pension, not the full pension, if it could be proved that the disease had been aggravated by military service.

Medical Notes in Parliament.

Tuberculosis Treatment in Ireland.—On July 20th Mr. Meehan asked two questions as to the treatment of tuberculosis in Ireland. The first had reference to provision for patients in advanced infectious stages. The Home Secretary said that the importance of securing the isolation of patients in such stages had been recognized by the Irish Local Government Board, which had brought the subject to the attention of county councils. The matter was complicated by the necessity of affording accommodation for such patients in reasonable proximity to their homes, as well as by difficulties of finance and management which would result from the establishment of numerous specialized institutions. The Board had advised county councils to transfer union isolation hospitals from the boards of guardians to the sanitary authorities, and to adapt them for the reception of advanced tuberculous patients. In reply to the other question, which referred to domiciliary treatment of tuberculous patients, Mr. Samuel said that it was being carried out under the schemes of a number of county councils, but the Irish Local Government Board had advised those bodies to proceed tentatively pending the complete organization of their dispensary arrangements. In a few instances the Board, in accordance with instructions from the Treasury, by whom half the net cost of approved schemes was recouped, had taken exception to a monetary allowance for the purchase of ordinary subsistence for a tuberculous patient under domiciliary treatment.

The Insurance Commissions.—On the report of supply (July 25th) the following votes, including in each case sundry grants in aid, were agreed to:

	£
Joint Committee	148,709
Insurance Commission (England)	3,167,239
" " (Wales)	204,923
" " (Scotland)	426,902
" " (Ireland)	273,475

War.

Promotions R.A.M.C.—In reply to Mr. Joynson-Hicks the Financial Secretary to the War Office stated, on July 19th, that 155 captains (R.A.M.C.) had been promoted since the beginning of the war. Asked whether the number of medical promotions bore any proportion to that of combatant promotions of similar rank, Mr. Forster said that the number of promotions in the R.A.M.C. had not been fixed so as to bear a definite proportion to combatant promotions of similar rank.

Medical Treatment of Discharged Wounded Soldiers.—On July 19th Mr. Forster informed Mr. Hume-Williams that soldiers discharged from the army on account of wounds could, whatever their place of residence, on application to the Secretary of the Royal Hospital, Chelsea, obtain treatment in a military hospital provided there was a reasonable probability that their disability would be cured or materially improved thereby. While in hospital their pension was raised to the full amount allowed for total disablement, and any allowance for children born before discharge to which they were entitled. A stoppage of 1s. a day was made for maintenance while they were in hospital.

Neurasthenia and Acute Mental Cases.—In a written reply to Commander Bellairs, the Parliamentary Secretary to the Admiralty stated that cases of neurasthenia were treated in general medical wards with excellent results. Acute mental cases were treated in the special mental wards provided in the three large naval hospitals, unless it was considered that the patient was more likely to recover at the special hospital at Yarmouth. The increase in the percentage of acute mental cases in the navy since the war began had not been very great.

Prisoners of War, German and British.—The Financial Secretary to the War Office, on July 25th, gave statistics of British and German prisoners, which are set out in the following table. Those repatriated or transferred to Switzerland have been deducted.

	Officers.	Men.	Totals.
German Army	401	19,799	20,200
German Navy	121	1,346	1,467
			21,667
Recently captured ...	—	—	4,000
			25,667
British Army	721	24,629	25,350

British Medical Journal.

SATURDAY, JULY 29TH, 1916.

MEDICAL HISTORY OF THE WAR.

DURING the last four or five months a good many medical men engaged in clinical work in the military hospitals in the United Kingdom have occasionally found among the papers brought by their patients from France a buff envelope containing a stamped and addressed post-card and a printed leaflet. The former supplies information regarding the patient's previous history, and the latter conveys a request that certain blanks on the post-card shall be filled in by the medical officer receiving the envelope and the card itself then consigned through the post to the Secretary of the Medical Research Committee.

The leaflet also affords certain other information, but since this is not very full and these envelopes and their contents are arriving with increasing frequency, it may be well to consider their purpose in some detail.

They are part of a system which has been evolved in France with the approval and co-operation of the Director-General of Medical Services, Sir Arthur Sloggett, by which it is hoped to attain two definite objects.

The first of these is to promote steady improvement of current practice so far as this can be achieved by informing men as to the previous history of cases that come into their hands and as to the results which *aut post aut propter hoc* ensue on the treatment they apply. The second is to secure the data that will be necessary if the clinical lessons of this war are ever to be assessed on something approaching scientific lines in a future medical history of the war.

These are the general and final aims; those which are particular and contributory require rather fuller description. Among the medical peculiarities of this war are three which call for consideration in this connexion. The first is the number of differently situated institutions through which any given patient is likely to pass before his treatment is complete; the second the fact that the clinical branch of the Royal Army Medical Corps is now an immense conglomerate body whose members as a whole have little experience in common beyond their passage through medical schools; and the third that the number of cases treated runs into hundreds of thousands.

These peculiarities have a number of sequences, some of which have an immediate bearing on the question of providing data of the kind required.

An outcome of the first peculiarity is that only in exceptional instances does any practitioner, whether surgical or medical, witness more than a bit of the story of any given case. The stage at which he sees it, the picture that it presents to him, and the views he will be disposed to form as to the underlying injury or morbid entity, will vary as a rule with the situation of the unit to which he is attached. This may be either just behind the firing line, at some nominal base such as the hospital areas in France, or at a true base such as those in the United Kingdom; the stage of the majority of cases seen at each of these three times will tend to vary correspondingly.

Consequently, a part of the scheme evolved in France is to endeavour to secure for the benefit of the future writers of the medical history of the war not only accounts of the diseases and injuries as seen at each of these three stages, but, as it were, composite pictures relatively free from subjective errors of observation, whether negative or positive. Provided with these composite pictures, or the materials for drawing them in the shape of a sufficient number of painstaking studies all covering precisely the same points, they will be able to give a consecutive account of many of the injuries and diseases seen in the war, and, with the help of certain other data, will be in a position to point out with some approach to scientific accuracy what medical and surgical lessons should be based on its events.

The cognate sequences of the other two peculiarities mentioned may be considered together. At first sight the best ore to provide for the furnace of the writers of the clinical section of a medical history of the war would seem to be the case sheets of hospitals, but it results from the peculiarities in question that this appearance is deceptive. The majority of patients enter, as has been said, at least three institutions, and even if full case sheets were invariably kept, their preliminary classification would be a serious task, and that of minutely analysing hundreds of thousands of them would occupy years. The case sheets are being classified and indexed in the statistical department of the Medical Research Committee, but the classified case sheets, even if all were complete, will not always present comparable data.

This is because the mental attitude of all practitioners to their cases is so affected by their previous experience and specific training that if any ten were asked to record each according to his own lights one and the same case, there would be considerable lack of uniformity in the resulting reports. Even if all were equally competent each in his own line, and all were equally versed in the art of note-taking, the report of A. would dwell in detail on some point which B. hardly noticed, and C. would supply information on a point not mentioned at all in that of D., and so on *vice versa* and right through the series.

As a result of these circumstances, it is part of the scheme evolved in France to render the history writers independent of case sheets in respect of detail, but at the same time secure for them such assistance as may be obtained from mass statistics relating to broad results. In the few months that have elapsed since it came into operation in all its parts ample evidence of its suitability to the circumstances has been secured. It depends for its success, however, very largely on the character and amount of the assistance rendered by workers in home hospitals, and for this reason we appeal to all those into whose hands fall the buff envelopes mentioned to co-operate fully and faithfully by filling in the schedules forwarded to them on dispatch of the post-cards enclosed.

Should they do so it is certain that the data necessary for the formation of sound conclusions will be provided, and the medical profession will not have to reproach itself with having neglected its opportunities. In other words, it will have placed itself in a position to say what lessons shall be based on the experiences of this war instead of having to accept the judgement of individual writers, the experience of no one of whom can be sufficiently varied and comprehensive.

In regard to questions other than those of clinical medicine and surgery the presages are equally satisfactory. In all areas in France arrangements are in operation by which specimens illustrative of the

pathology of the injuries and diseases seen at the front are transmitted to the museum of the Royal College of Surgeons of England, whence they are sometimes, if desired, redistributed to local museums and institutions.

So, too, in regard to questions connected with epidemiology and general hygiene. What is in effect, though not in name, a species of collective investigation of these has been in progress from a very early stage of the war, and the resulting data are being admirably handled by the advisers in pathology and sanitation respectively attached to the staff of the Director-General in France.

PRIMITIVE TREPHINING.

THE practice of trephining by prehistoric man is a subject which has long attracted the attention of anthropologists and to it valuable contributions have been made in recent years by the late M. J. Lucas-Championnière and Sir Victor Horsley and by other eminent surgeons.

Attempts have been made to account for the holes found in prehistoric skulls as the relics of some religious rite, but Dr. Sören Hansen,[1] while admitting that amulets and other charms may have been carved out of the skulls of the dead, regards this view as less plausible than the explanation that the skulls were opened during life to relieve pain. In Sweden, a grave was found in 1900 containing ten skulls, of which three had been trephined, and in every case the patient had evidently survived the operation. In Teneriffe von Luschan collected 210 skulls, ten of which had been trephined. He found several others in which the outer table only had been scraped away, the operator evidently having decided not to expose the brain. Luschan, on the basis of his own material and that collected by others, estimates the mortality from primitive trephining at about 4 per cent. As the operation must often have been performed in hopeless cases, the patient dying in spite of, rather than because of, the operation, this estimate is one of which our ancestors may justifiably have been proud. They often repeated the trephining till the patient's skull was honeycombed, and we may assume that the repetition was tolerated because it gave relief, temporarily at any rate.

The technique of the operation does not seem to have been uniform, but the most common procedure evidently consisted of scraping away the bone with a sharp stone or other simple tool. This process is not as slow as might be supposed, and it entails but little risk to the brain. Holes with a diameter of 14 centimetres have thus been formed without killing the patient. The conditions which indicated the use of the trephine probably included epilepsy. Another common condition was no doubt trauma, and in the anatomical museum in Copenhagen there is a skull from the early iron age showing a large triangular opening, the lower side of which, measuring about two inches, had evidently been cut by a sword. The two upper sides of the triangle had been cut with a saw in an attempt to remove depressed fragments of bone. As the edges of the triangle show no signs of repair, it may be assumed that the operation was unsuccessful. Dr. Hansen draws an interesting comparison between the art of trephining in the stone age and in the nineteenth century. While the stone age surgeon would seem to have been confident in his technique, the surgeons of the middle of the nineteenth century were at loggerheads. But it is a curious fact that, while surgeons less than a century ago were picking holes in each other's arguments for and against picking holes in the skull of man, the uneducated layman and shepherd in many places regarded this operation as an everyday performance. Prunières has described the operation of trephining sheep skulls by shepherds in the province of Lozère. The sheep's head was secured between the shepherd's knees, while a hole was bored in the skull with a pointed, round-handled knife, rotated between the palms of the hands; as the custom was well established, the operation must probably have been successful in a certain proportion of cases.

Two forms of trephining are recognized by the modern Arab. *Mounheila* is the operation by which only the outer table of bone is removed, and *Ahachema* is the operation by which the inner table also is removed. The former is employed in diseases of the brain, the latter in fractures of the skull. No anaesthetic or antiseptic is used, yet all the writers who have described this operation agree as to its safety. The wound is dressed with an ointment containing several ingredients. In Daghestan, in the Caucasus, Russian army surgeons have found that the natives trephine not merely for headache and injury, but also to extort pecuniary compensation from an enemy, who has to pay for the operation, whether it be necessary or not; for the sake of cash, the recipient of a mere knock on the head gladly allows the surgeon to ventilate his brain. The operation is performed with a narrow gouge after the scalp has been divided. Great care is taken to round the corners of the hole in the skull, and the edges of the bone are neatly bevelled. The recovery is usually uneventful. A somewhat similar procedure was adopted by the Montenegrins in the nineteenth century, but their technique was less primitive.

In the Fiji and in several other groups of islands in the Pacific trephining was now and then practised. In 1831 William Ellis described an operation performed in the island Bora-Bora of the Society group. When the skull was fractured the scalp was incised and loose fragments of bone were removed. A piece of cocoa-nut shell was carefully carved so as to fill exactly the hole in the skull, and it was then covered with the scalp. This operation was often successful. In 1874 Ella described an operation performed on the island Uvea in the Loyalty group. Here it was assumed that headache, neuralgia, vertigo, and other cerebral affections proceed from a crack in the head or from pressure of the skull on the brain. The scalp was divided by a cross or T-incision, and the skull scraped gently till the dura mater was exposed through a hole the size of a crown piece. When the pia mater was also exposed owing to the rashness of the surgeon or the impatience of the friends, the operation was fatal. Even with the greatest care the mortality was about 50 per cent. Formerly the trephine was a shark's tooth; but this was later replaced by a piece of broken glass. The site of the operation was usually at the junction of the coronal and sagittal sutures, or a little higher, on the supposition that this is the most common position of a fracture.

Dr. Hansen also refers to the practice of trephining among the Cornish miners, whose familiarity with the operation dates more than a century back. It was a handicraft rather than a science, and was handed down from father to son. During the middle of the eighteenth century no local surgeon hesitated to trephine for injuries to the skull, but the credit

[1] Primitiv Trepanation, *Medicinsk-Historiske Smaaskrifter*. Edited by Vilhelm Maar. Vilhelm Trydes Forlag. Copenhagen, 1913.

for the restoration to popularity of an operation at one time considered totally inadmissible appears to be due to Percivall Pott and his pupils. The operation, as taught by Pott, was usually performed with success provided it was not undertaken in the overcrowded, insanitary hospitals of the day.

DURATION OF SERVICE OF TEMPORARY OFFICERS R.A.M.C.

WE are informed that officers serving in the R.A.M.C. with temporary commissions have been notified that the clause in their contract giving them the option of resigning their commission at the end of the year has been, or will be, annulled. So far as we are aware, no official notification to this effect has been published. The official statement as to the terms and conditions of service of civilian practitioners joining the R.A.M.C. with temporary commissions contained the following clause: "They must engage for a period of twelve calendar months, or until their services are no longer required, whichever shall first happen." In the Memorandum on the National Organization of the Medical Profession in Relation to the Needs of H.M. Forces, and of the Civil Population and to the Military Service Acts, issued with a covering letter from the Director-General A.M.S. on June 7th, 1916, and published in the SUPPLEMENT to the BRITISH MEDICAL JOURNAL on June 17th, 1916, it was said that "in recognition of the voluntary character of the service thus offered, the Army Council have undertaken that a man thus offering himself shall have always at least a month's notice before being taken; that he should not be called on to fulfil his obligation of commissioned service for more than twelve months consecutively, and that he should have a certain stated rate of remuneration during the present war." We do not believe that many officers now serving with temporary commissions will desire to resign them; in fact, experience has already shown that those who so desire form a small minority. But circumstances may arise in particular cases in which a man may wish to take advantage of this condition of the voluntary contract into which he entered. The Memorandum pointed out that in virtue of the compulsory provisions of the Military Service Acts doctors up to the age of 41, whether married or single, are under the same statutory obligation as other citizens to serve in His Majesty's Forces for the duration of the war. But the Memorandum went on to recognize that the medical man is in a very special position, first, because he is needed in the navy and army to render there the same kind of services that he fulfils in civil life, and secondly, because arrangements can be made in a large number of cases for carrying on his work in a manner to conserve his private interests and also the interests of the civil population, the necessary element in determining the last point being a decision as to which of the men in a given place can most wisely be selected for the Army Medical Service. The second Military Service Act gave to medical men the right to make use of a special procedure for the determination of questions of exemption. The Act directed that Professional Tribunals should be set up to deal with claims for exemption made by duly qualified medical practitioners, and the Order in Council of June 1st was issued accordingly. We have no doubt that if the War Office has felt compelled to notify officers of the R.A.M.C. who hold temporary commissions which expire shortly that they will not be allowed to return home, it is only a temporary measure to meet the urgent exigencies of the moment, and that the Army Council will, at the earliest possible moment, fulfil the terms of the contract made with the holders of temporary commissions. It must be evident at the present time, looking to the conditions in France, Egypt, and Mesopotamia, that the needs of the army are very great, and while there may be some cases of hardship amongst those who have so patriotically answered the country's call during the past year, yet we think that such members of the profession who very rightly may at first feel some resentment at being retained beyond the period contracted for, may rely upon the good faith of the Government to release them at the earliest possible moment, and upon their professional brethren in this country to do everything in their power to see that their interests are safeguarded in every possible respect. We believe we are justified in stating that any officer who took a temporary commission R.A.M.C. on the understanding that his period of service would be for one year only, will, if he is under 41 and enrolled, not be compelled, when the present strain has passed, to undertake further service until, in the opinion of the statutory professional committee, the necessity arises for him to do so, and that full opportunity will be afforded him to put his circumstances before this committee in the event of a further call being made upon him.

SIR WILLIAM RAMSAY'S WORK.

SINCE Sir William Ramsay's career as a scientific investigator extended over a period of about forty-five years, and during the whole of that time he was almost continuously engaged in research, it is not possible to give here more than the merest outline of the work which he accomplished, or to convey a really inadequate idea of the extent of the debt which science owes to him. Although a small proportion of the papers he published dealt with subjects belonging to organic chemistry, he showed, very early in his career, a decided preference for investigations belonging to the physical and inorganic departments of chemistry, and the greater portion of his work is therefore concerned with the physical and chemical properties of inorganic substances. During the period of his life extending from 1872—when he returned from Germany—to 1893 he published a very large number of papers dealing chiefly with a somewhat wide range of subjects in the two branches of chemistry mentioned above, some of the more important being those on the atomic and molecular volumes of elements and compounds at their boiling points, the vapour pressures of certain liquids, and the preparation and properties of nitrous oxide and nitrogen peroxide. At the end of this time, however, while he was well known in the scientific world, he had not yet made any discovery of supreme importance, and had therefore not attained prominence in the public eye. In the year 1894, working, to some extent, in conjunction with Lord Rayleigh, he discovered that the atmosphere contains a small amount of a gas which differs from nitrogen chiefly by possessing a greater density and a much greater degree of chemical inertness, and at the annual meeting of the British Association the discovery was announced as a joint one, the name given to the new gas being argon; the full details, however, were not published until a little later. During the course of the next year, in collaboration with Professor Norman Collie and others, he published a paper dealing with the discovery of helium in a number of minerals consisting of the salts of uranium, yttrium, and thorium; the element was already known, by spectroscopic evidence, to exist in the sun, but it had not been previously discovered upon the earth. A number of papers followed, dealing with the chemical and physical properties of argon and helium, and in 1898 and 1899, by the fractional distillation of liquid argon and liquid air, Ramsay discovered that the argon already obtained really consisted of a mixture of four gases—pure argon, neon, krypton, and zenon—in addition to small amounts of helium; the latter gas, however, had been discovered to exist in the atmosphere, just previously, by another observer. In 1903, working in conjunction with Professor Soddy, he showed conclusively that helium is produced by

the breaking up of radium, and thus proved that the transmutation of elements is a scientific fact. After this extremely important discovery he carried out a considerable amount of work on the properties of radium emanation and the changes produced in substances exposed to its action, and in 1907 he published a communication in which he stated that he had succeeded in obtaining lithium by the action of radium emanation on certain salts of copper, while in similar circumstances an acid solution of thorium nitrate had yielded carbon dioxide. Details of further experiments affording similar results were given in 1909 and 1910. Sir William Ramsay will always be chiefly remembered for his work on the rare gases of the atmosphere, and on the production of helium from radium, but, as shown above, this forms only a small part of his total contributions to scientific knowledge. His death is a great loss to science, for, though in his 64th year, he was full of energy and planning new researches, until struck down some months ago by the illness which proved fatal on July 23rd.

THE DYE INDUSTRY AND SYNTHETIC DRUGS.

IT is well known that in the past an intimate connexion has existed between the German dye industry and the manufacture of synthetic drugs, and that a very large proportion of the latter in common use have been discovered and produced in German works established in the first place for the production of artificial colouring matters. This fact renders the future progress of the British coal-tar industry of considerable importance from the medical point of view, since it is to be hoped and expected that, in the future, British dye makers will copy their German rivals and undertake to supply, at least partly, the demand for the more important synthetic drugs. Unfortunately, however, for the moment there is no prospect of any immediate movement in this direction, since dye manufacturers in this country are now working under very considerable difficulties. Several of the raw materials and other indispensable chemicals required—such as benzol, toluol, nitric and sulphuric acids, etc.—are also used in the manufacture of explosives, and are therefore available in limited quantities only. Moreover, the production of finished dyes occupies a number of stages, and necessitates the preparation of a large number of intermediate chemical products which cannot at present be obtained in quantity from outside sources, and which must consequently be manufactured by the dyeworks themselves. On the other hand, once the industry is firmly established on a large scale, the very fact that such large numbers of organic chemicals are produced during the manufacture of dyes should enable British dye manufacturers to compete more readily with the German producers of medicinal chemicals, since among the intermediate substances required in dye-making are such compounds as benzaldehyde, beta-naphthol, acetanilide, phenol, resorcinol, salicylic and benzoic acids, etc., and many other chemicals which may be readily converted into well-known drugs. Another point of importance is that by-products of dye manufacture which would otherwise be of practically no value can in some cases be converted into substances of considerable medicinal importance. We may therefore reasonably expect that when dyes are produced in large quantities in this country, we shall also become less dependent upon other countries for our supplies of synthetic drugs, and that the monopoly which Germany has possessed up to the present in this branch of chemical manufacture will be broken.

BRITISH PRISONERS IN GERMANY.

ON July 13th Lord Robert Cecil stated in the House of Commons that Germany categorically repudiated the charge that it did not recognize its obligations in the matter of the supply of food to British prisoners of war, and also the assertion that less food was supplied to civilian than to military prisoners, the rations furnished to all prisoners of war being identical. The Imperial German Government had sanctioned the dispatch of collective consignments of food for those prisoners who received no direct parcels on condition that they should not contain a predominance of such commodities as were only obtainable to a limited extent by the German people themselves in consequence of the British blockade. If, on grounds of reprisal, the rations now supplied to German prisoners of war in this country were in any way reduced Germany would not only withdraw permission for collective parcels, but also prohibit the receipt of individual parcels. On July 17th the United States Ambassador in London forwarded to the Foreign Office a copy of a letter from the United States Ambassador at Berlin regarding the housing of British civilians interned at Ruhleben. Mr. Gerard, who writes with considerable warmth, reports that practically no improvement has been made in the housing, although the German authorities, after two years of war, have certainly had ample time to provide accommodation. It is intolerable, he says, that people of education should be herded six together in a horse's stall. The light for reading is very bad. In the haylofts above the stables conditions are even worse; the beds touch each other. Mr. Gerard is satisfied that the camp authorities do all in their power to better conditions, but they have no power to make the needed improvements. Sir E. Grey has asked Mr. Gerard to urge on the German Government the necessity of taking immediate steps for the provision of better accommodation. The *Times* of July 26th publishes a statement by Sir Timothy Eden of Windlestone Hall, Ferryhill, Durham, who has recently been released after an internment of a year and a half, first at Rasdadt and afterwards at Ruhleben. At Rasdadt the quarters were those allotted in normal times to the worst kind of criminal, and the warders treated the prisoners as convicts. They had the ordinary prison diet, most of it very distinctly unpalatable or not fit for human food. On arrival at Ruhleben, Sir Timothy was sent with five others into a stable loft 6 or 8 yards in length and 6 ft. wide. Three months later they were given better quarters, but their straw beds went with them. The confinement, he states, is beginning seriously to affect the prisoners, especially their mental condition. After the recent stir in England, the prisoners were told they would get "margarine one day and jam the next." The margarine, on analysis, was found to contain 46 per cent. of water. This was all that was done to improve the food. Those who were lucky got 10 oz. of meat and four potatoes a day, and 5 oz. of fish (including bones) a week. They had a mysterious drink described as coffee or tea. The hospital conditions were shocking, but latterly had been somewhat improved. A doctor was never allowed to attend a patient at night. An inspection of the camp for prisoners of war at Giessen was made on July 3rd by Dr. D. J. McCarthy, accompanied by Mr. Gerard. The report states that the housing accommodation is adequate, the provision for medical care satisfactory, and other conditions good.

THE PROTRYPTIC PROPERTY OF BLOOD FLUIDS.

A PAPER by Captain S. R. Douglas, R.A.M.C., on the blood fluids in intraleucocytic digestion has been communicated to the Royal Society by Sir A. E. Wright. It had been noticed, particularly when making estimations of the opsonic index, that the degree of digestion undergone by bacteria ingested by the leucocytes varied markedly when different serums were employed. The author points out that Rosenow had already worked at this problem, and had come to the conclusion that the variation in the degree of digestion undergone by the micro-organisms after their ingestion by the leucocytes was due to a property of the serum which was quite independent of the opsonic power. Further, he concluded that the serum

influenced the digestion of the ingested bacteria by acting directly on the leucocytes—not on the bacteria—stimulating them so that they had greater digestive powers. Captain Douglas's experiments confirmed Rosenow's results as regards the blood fluids possessing the power of favourably influencing the digestion of bacteria ingested by the leucocytes, and his opinion that this property was quite independent of the opsonic power; but, contrary to his conclusions, they definitely proved that the blood fluids act directly on the bacteria or on the red blood cells, preparing them for digestion by the leucocytic ferments. In addition, they showed that heating normal serum to 60° C. for a few minutes completely destroyed this property. It is proposed to call this property the protryptic property of the blood fluids.

PARAFFIN MASK FOR BURNS.

ATTENTION was called recently by Mr. Albert Gray, C.B., K.C., chairman of the French Wounded Emergency Fund, in a letter to the *Times*, to a method of treating burns by paraffin adopted at the St. Nicholas Hospital, Rue Ernest Renan, Issy-les-Moulineux, Paris, by Dr. Barthe de Sandfort, who described[1] it to the Académie de Médecine rather more than two years ago. He was led by his experience of the mud baths of Dax to employ the method in rheumatism and arthritis in 1902; in 1903 he began using it as an application, after cleansing the parts, to ulcers and burns, spraying it on at a temperature of 80°, and even as high as 100° C., without inconvenience. He considered that one chief advantage of the method was that after the paraffin had solidified it exercised a slight but long-lasting pressure upon the part. To increase its toughness and suppleness he added a certain proportion of resins, by preference oil of amber (oleum succini). He does not mention the proportion, but as an external remedy for rheumatism oil of amber has been used in the proportion of 1 part to 3 of olive oil or more, up to equal parts. It is to be noted incidentally that oil of amber is seldom found pure in commerce, and that much of it is made not by the distillation of amber, but by the destructive distillation of resins such as copal and dammar, and Dr. de Sandfort's reference to resins suggests that he may be using the commercial product. He stated in his paper at the Académie that under the paraffin shell intense lymphocytosis occurs, followed by the appearance of islets of epithelium, which gradually extend, and asserted that cicatrization finally took place without contraction. Solid paraffin made fluid by heat has been used for preparing casts of limbs and various other parts of the body, including the head and face. The idea seems to have occurred independently to several people, for when Professor Peters of Toronto described in this JOURNAL in 1898 a method in which a spray was used, Mr. Lawson Tait wrote to say that he had used melted paraffin, put on with a rough painter's brush, with the help of a sponge and some iced water, in 1864, and Dr. MacDowel Cosgrave of Dublin said that he had used a similar method devised by Mr. Lewis of Dublin. Professor Peters described and figured an apparatus with a special ejector. With it he rapidly put on a thin layer over the whole surface to be treated, and gradually strengthened it until it was about one-sixteenth of an inch thick; he then sprayed with iced water, which caused rapid solidification. With his ejector it was possible, when the first layer had reached its right thickness, to turn on the cold water, so that the two sprays acted together. "The instant a particle of paraffin," he says, "touches a particle of cold water the former becomes solid. The result is that a sort of spongy tissue is formed with startling rapidity, in the cancellous spaces of which droplets of the cold water become imprisoned." The method in use in Paris seems to depend on getting a fairly thick solid mask which is spoken of as a "carapace." How long it should be left on is not stated, but it is said not to adhere strongly and to be easily removed, and this would no doubt be the case except in hairy parts, where special precautions would have to be taken.

[1] *Bulletin de l'Académie de Médecine*, April 14th, 1914.

THE SUPPLY OF PETROL.

ON and after August 1st next no motor spirit will be purchasable except on production of a licence from the Petrol Control Committee of the Board of Trade. Before the licence is issued the amount of the duty must be paid. It is, in the case of medical men, 3d. a gallon, and the amount of petrol permitted to be bought is based on a six months' supply, so that practically the licence is for a period of six months. In the case of commercial vehicles it is for four months, and of private motor cars for three months. The committee appears to recognize that the quantity allowed will fall short of individual expectations, and if the ratio of supplies for military requirements changes within the next few months it will be possible to revise the allotment made by it when the time comes for the renewal of licences. The position with regard to the supply of motor spirit to medical practitioners in the immediate future is not very clear. The statement in the original memorandum issued by the Petrol Control Committee in June was to the effect that it was not anticipated that there need be any curtailment at present of reasonable demands in the first two classes ("A" and "B") of the three classes into which motor users were divided. Medical practitioners are in Class A. As the result of the so-called petrol census, licences for the purchase of a stated amount of petrol during the six months beginning August 1st are being issued to medical practitioners. The issue of such licences does not appear to have been completed, but in very many cases the amount of motor spirit which the licence authorizes the holder to buy is considerably less—in some cases very much less—than the medical practitioner has been in the habit of using. The British Medical Association has been in communication with the Petrol Control Committee, and is informed that the supply companies will deliver motor spirit to retailers up to August 1st on condition that no motor spirit is to be resold except to priority buyers in Classes "A" and "B"; such priority buyers must hand a written order to the company. It would seem, therefore, that a medical practitioner should have no difficulty in obtaining petrol down to August 1st, but as things at present stand after that date he will be limited during the ensuing six months to the total shown on the licence he holds. It will probably be necessary to make further representations to the committee on behalf of the medical profession, and practitioners who anticipate difficulty in getting through their work on the amount shown on their licence should communicate with the Medical Secretary, British Medical Association, 429, Strand, W.C.

SENIOR STUDENTS AS VACATION RESIDENTS.

THE managers of many civil hospitals have given it to be understood that they have been in straits for resident officers, and that the work to be done was a great strain upon those doing it. The strain might perhaps be to some extent temporarily relieved if the services of senior students could be utilized during the long vacation of the next two months. The Dean of the Medical Faculty of the University of Edinburgh informs us that many fifth-year students have expressed to him their desire to give their services during the vacation to civil hospitals in need of junior resident officers. He is prepared to receive applications from civil hospitals, and to recommend senior students known to him who would be competent to fill such offices.

A GENERAL meeting of the Auxiliary R.A.M.C. Benevolent Fund will be held in the lecture theatre of the Royal Army Medical College, Grosvenor Road, S.W., at 2.45 p.m. on Monday, August 7th. The Director-General will preside, and he hopes that as many officers as possible will attend.

THE WAR.

"THE ENTERICA GROUP."

A DISCUSSION on the Enterica Group took place at a recent meeting of the Anzac Medical Society at Cairo.

Lieut.-Colonel WALTER SUMMONS made a report on the cases of enterica at the 1st Australian General Hospital at Heliopolis. Patients suffering from long-continued fevers were, he said, being met with in the medical wards from August, 1915, onwards. The agglutination blood tests did not give a positive Widal reaction to the typhoid bacillus, yet the clinical picture was similar to that of an infection with this organism. Arrangements were then made with the Laboratory of the Institute of Hygiene, Cairo, for the examination of the blood of these febrile cases. The staff of the laboratory had recently been augmented by Captain Hutchens and Lieutenant Myat, two English bacteriologists. All the cases were Australians, and one can assume that all had been inoculated twice with antityphoid vaccine within the twelve months prior to infection, and also that the patients had not been inoculated with paratyphoid vaccine. For the blood tests five cubic centimetres of blood were withdrawn into a syringe from a vein at the bend of the elbow as soon as the clinical picture was one of suspected enteric. The blood culture was only of value in the first ten days of the illness except in the occasional case when the organisms persisted, and in these the symptoms were severe.

Blood Examinations at the Central Laboratory.

Blood cultures:		Agglutination tests:	
+ Paratyphoid A	40	+ Paratyphoid A	77
+ Paratyphoid B	12	+ Paratyphoid B	18
+ Typhoid	5	+ Paratyphoid A and B ...	2
Total	57	+ Typhoid (strong)	28
Negative results	128	+ Typhoid (weak)	37
		Negative results	63
Total cultures ...	185	Total performed ...	225

Not a few returns came back thus: Weak typhoid and + paratyphoid A or paratyphoid B. These are counted as paratyphoid A or paratyphoid B respectively. In view of the rarity of + typhoid in the blood cultures, it is evident that the agglutination test of *B. typhosus* is not an index of actual infection with this bacillus. The value of the agglutination test in previously inoculated patients is open to discussion. Nevertheless, in this epidemic it seems a fair inference to assume that a + paratyphoid A or B is diagnostic of disease. After a universal prior inoculation it will have to be regarded that the only proof of an enterica infection is the finding of the actual organism in the blood or in the excreta. As the hospital served the double purpose of being the hospital for the troops training in Egypt and of receiving patients from the Mediterranean force at Gallipoli, further analysis of the positive results was made. Combining the blood cultures and the agglutination tests, the totals are:

	M.E.F.	Garrison.
Paratyphoid A	81	... 34
Paratyphoid B	7	... 23

The proportion in the M.E.F. cases is 23 to 2, and in the Garrison Force 3 to 2 of paratyphoid A to paratyphoid B. These infections seem to be clinically identical. From observations of a single epidemic it has not been possible to differentiate the various infections except by means of the laboratory tests. The clinical aspect of the paratyphoid patient differs from the well known typhoid picture. The patient does not look so ill, in spite of the temperature running on for weeks between 103° and 104° F. The rash is decidedly more marked, and may be so distributed that at first glance one thinks of measles, but the spots are only on the trunk and limbs as far as the elbows and knees; they are pinkish, not confluent, and vary in size, but usually are larger than the spots seen in typhoid. Again, the spots often appear late in the disease, during the third week, and when the fever is defervescing. Many of the attacks came while the men were in hospital for surgical ailments, and thus the first signs could be observed. The mode of onset in order of frequency was—

(*a*) Gradual with severe headache that persists for a week and an increasing daily rise of temperature.

(*b*) With rigors and high temperature from the start, that shows little remission.

(*c*) With a prodromal rise of temperature for three to five days, after which the temperature comes to normal for one to four days, and then the fever runs its prolonged course.

(*d*) Simulating acute appendicitis, with vomiting. Some ten or a dozen cases were operated on and the appendix removed. The inflammation of the appendix was part of a general inflammatory condition of the intestines.

(*e*) With symptoms of acute gastro-enteritis.

(*f*) With signs and symptoms of pneumonia.

The course of the fever in many cases was prolonged, and though the patient progressed favourably still the temperature ran into the sixth week before it came to normal. The type of fever was irregularly intermittent. Relapses were not uncommon, with a repetition of the signs and symptoms, but milder in degree. Headache at the onset was a distressing symptom, but this passed off in the first week, and after passing through a lethargic stage of varying duration the patient became bright and had few troublesome symptoms. As a rule the patients lost weight, but not to the extent of cases of true typhoid. From the rarity of serious complications and low mortality figures one was inclined to allow more food. Distension of the bowels and undigested food in the stools readily yielded to treatment. Apart from the occasional initial diarrhoea the bowels were constipated and relieved by enemata. One of the early patients died of haemorrhage, but this was before the nature of the fever had been recognized. Less than 1 per cent. of the cases had melaena; enlargement of the spleen was an almost constant sign. Of the sequelae the cardiac affections took a prominent place. Myocardial weakness was common, and demanded prolonged convalescence. The pulse not infrequently did not become rapid until the patient had been allowed up. Less frequently a gross arrhythmia was found, and these cases did not improve till after a prolonged rest in bed. A few cases of polyneuritis were seen, but more cases of limited neuritis came to us amongst the convalescent patients transferred from other hospitals. Phlebitis, cholecystitis, and nephritis were less common complications. Few soldiers, he thought, would suffer permanent damage as the direct result of the infection, and out of the 800 cases passed through the hospital there had been only five deaths. This, however, did not give a true idea of the mortality-rate. Half of the patients had reached the convalescent stage, and not a few were in bed for other reasons when the bowel infection developed. Moreover, the most severe cases from Anzac were not sent to Cairo. On the other hand, there was no greater fatality-rate amongst the cases that came from the Garrison Force. The European and Egyptian predominating organism was paratyphoid B; in the Gallipoli infection paratyphoid A largely predominated. As paratyphoid A was common in India, it might be that the Indian troops brought this organism. It remained to be seen which bacillus was prevalent amongst the Turks. The value of prophylactic injections with antityphoid vaccine was upheld. A number of typhoid cases had occurred, and doubtless from the nature of the position at Anzac the percentage would have been much greater had not some opposing influence been present. The troops had now to a large extent been inoculated against paratyphoid A and B, and this, combined with the removal of carriers, would, it was hoped, lessen the number of cases next season.

Colonel W. H. PARKER, C.M.G., D.D.M.S., New Zealand Forces, contributed, from the New Zealand General Hospital, Cairo, of which he was O.C., statistics of enteric cases examined between November 1st, 1915, and February 20th, 1916.

Incidence.—The typhoid figure was slightly below, the paratyphoid A much above, and the paratyphoid B much below, the figures given in the memorandum recently issued of results obtained in the laboratories of Cairo, Alexandria, and Mudros:

	N.Z.	Memorandum.
Total cases examined	170	... —
Causative organism isolated in ...	34 per cent.	... —
Due to typhoid bacillus	10 ,,	... 11
Due to paratyphoid A	73 ,,	... 44
Due to paratyphoid B	17 ,,	... 45

Place of Origin.—The cases classed in the following table under the head Gallipoli includes those developing

enteric shortly after their return to Egypt; but the large number of cases direct from Gallipoli may account for many failures to isolate the causative organism owing to the period of disease on examination:

	Gallipoli.	Egypt.
Total enterics	89	81
Of which there were due to typhoid	5	1
Paratyphoid A	24	18
Paratyphoid B	1	9

The majority of the typhoid cases were from Gallipoli, but 9 out of 10 of the paratyphoid B were local cases.

Inoculation.—Of the 170 cases of enteric:

54 per cent. had been inoculated with New Zealand vaccine only.
40 per cent. were inoculated with New Zealand vaccine and reinoculated with R.A.M.C. vaccine.
6 per cent. had no record of any inoculation at all.

Of the typhoid cases:

2 had been inoculated with New Zealand vaccine.
1 had received only the initial dose of New Zealand vaccine.
1 was a British soldier who had never been inoculated.
2 were inoculated with New Zealand vaccine and reinoculated with R.A.M.C. vaccine.

These figures indicate that, whatever may have been the protection afforded by the New Zealand vaccine, the R.A.M.C. vaccine gave no appreciably better result.

Mortality.—Of the 170 cases, 3 died, two from typhoid and one from a clinical type of typhoid from which the causative organism was never isolated. The mortality from enteric was therefore under 2 per cent.

The bacteriological examinations of the blood, faeces, and urine, and the agglutination tests, were carried out at the Central Laboratory, Cairo. The percentage of positive results is satisfactory, considering that so many of the cases had been ill for some considerable time before admission, and also that 19 were convalescents examined for evidence of being carriers, with negative result in all instances. Many Widal reactions were made without much information of diagnostic value being obtained. This I attribute to the method adopted of requiring a specimen of blood for agglutination tests at the same time as the blood culture, as early in the disease as possible, and attempting to draw conclusions from the one examination as to the nature of the infection. Such a system was bound to give unsatisfactory and misleading results, particularly in patients inoculated against typhoid, first, because agglutinations are usually only formed in the second and third week of the disease, and secondly, because results of real diagnostic value could be obtained only by several tests made at intervals of about a week, so as to obtain material for working out the curve showing the alteration in agglutinating power of the patient's blood. Such a curve worked out on one of our cases showed that on the second day of the illness, when a blood culture gave paratyphoid A, the patient's serum agglutinated typhoid in a dilution of 1 in 500, but failed to agglutinate paratyphoid A or paratyphoid B in any dilutions. On the ninth day the serum agglutinated typhoid in a dilution of 1 in 1,000, but was still quite negative to both paratyphoids. By the twenty-first day, however, the patient's serum agglutinated both typhoid and paratyphoid A in a dilution of 1 in 125, and was still negative to paratyphoid B. The obvious conclusion was, then, that the patient developed an immunity to the infecting organism—namely, paratyphoid A. Had any opinion been given on the tests of the second and ninth days it would have been quite misleading. The patient developed symptoms just after arrival in Egypt from Gallipoli. Owing, no doubt, to the system adopted, the agglutination tests on our cases disagreed with the results of the cultural tests in 50 per cent. of the cases. They are, of course, no longer being carried out.

Invaliding of Enteric Cases.—The principle adopted now with New Zealand troops is that the cases which have given negative results after blood cultures, and also examinations of urine and faeces, are returned to duty and only carriers are invalided.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN JOHN HENRY DYKE ACLAND, R.A.M.C., was reported as killed in action, in the casualty list published on July 24th. He was born in 1880, the son of the late Rev. H. Dyke Acland, vicar of Luscombe, Somersetshire. He received his medical education at St. Thomas's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1905. He was house-surgeon to the East London Hospital for Children, Shadwell, and house-physician to the West London Hospital; afterwards he went to South Africa, and after serving as medical officer of the Beira railways, began to practise at Buluwayo, the chief town of Southern Rhodesia, where he was medical officer of the Buluwayo Government schools. He took a temporary commission as Lieutenant in the R.A.M.C. on October 17th, 1914, was promoted to captain after a year's service, and was attached to the Somerset Light Infantry.

Captain Geoffrey Richard Heard, R.A.M.C., was reported as killed in action, in the casualty list published on July 22nd. He was educated at the London Hospital, qualified as M.R.C.S. and L.R.C.P.Lond. in 1909, joined the R.A.M.C. as a temporary lieutenant on December 18th, 1914, and became captain after a year. He was attached to the Royal Warwickshire Regiment.

Captain H. G. Morris, R.A.M.C. (temporary).

Captain Douglas Wilberforce Smith is, we understand, the officer reported in the casualty list published on July 15th under the initials D. W. Smith, which led us into the error of reporting last week the death of Captain David Wallace Smith, who is, we understand, at present serving on the hospital ship *Salta*. Dr. Douglas Wilberforce Smith graduated as M.B., B.S.Lond. in 1901, and took the diploma of F.R.C.S.Eng. in 1911. He was a civil surgeon with the South African Field Force, and had been assistant house-surgeon to Guy's Hospital, at which school he received his medical education. He was for a time Emden scholar in the Cancer Research Laboratory of the Middlesex Hospital, and wrote two reports on squamous cell carcinoma in respect of Altmann's granules in the *Archives of the Middlesex Hospital Cancer Reports*. He had also held the office of registrar of the Samaritan Free Hospital for Women.

Lieutenant Raymond Jones, R.A.M.C., attached Royal Welsh Fusiliers, was killed in action in July. He was the son of the late R. Bettes Jones, of Llanrhaiadr, and was educated at Oswestry High School and at University College, Liverpool, graduating as M.B. and Ch.B. of Victoria University in 1901. After serving as casualty surgeon of the Southern Hospital, Liverpool, and acting as assistant to Dr. Owen, of Brymbo, Denbighshire, he went into practice at Cardiff, till he recently took a temporary commission as lieutenant in the R.A.M.C. He was 39 years of age, and unmarried.

Died of Wounds.

Lieutenant Walton Ronald Wilson, R.A.M.C., died on July 12th of wounds received the previous day, aged 25. He was the only son of Dr. Wilson of Forest Hill, S.E., and was educated at Epsom College, where he gained an entrance scholarship, and also the Haviland leaving exhibition, with which he proceeded to Emmanuel College, Cambridge. After graduating as B.A. in the Natural Science Tripos, he completed his medical course at Bart.'s, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in October, 1915. After qualifying he took a temporary commission as lieutenant in the R.A.M.C., and at the time of his death was attached to the Seaforth Highlanders. He was married only last April.

Captain Frank Lee Cleland, R.A.M.C., died of wounds in July. He was the elder son of Mrs. Cleland of Breda House, Newtownbreda, co. Down, and was educated at the Methodist College and at Queen's University, Belfast, where he graduated as M.B., B.Ch. and B.A.O. in January, 1915, immediately afterwards entering the R.A.M.C. as a temporary lieutenant on February 1st, 1915. He was promoted to captain on completion of a year's service.

Captain Robert Williams Michell, R.A.M.C., died on July 20th, aged 56, of wounds received on July 3rd, while bringing in wounded men from "No man's land." He was the eldest son of Richard Ferris Michell, of Truro, was educated at Caius College, Cambridge, and at Bart.'s, and graduated as M.A.Camb. in 1889, M.B. and B.C. in 1894, and M.D. in 1899; he took the F.R.C.S.Eng. in 1895. After filling the posts of senior clinical assistant in the throat department and of house-physician at Bart.'s, and house-physician of the General Lying-in Hospital in York Road, he went into practice at Cambridge. He served in

the South African war and held the Queen's medal with three clasps. On October 25th, 1914, he took a temporary commission as lieutenant in the R.A.M.C., and was promoted to captain after a year's service. He served for some time on the hospital ship *Asturias*, and was on board her when a German submarine tried to torpedo her, but since May, 1915, had been attached to the Royal Garrison Artillery at the front.

We are indebted to Sir Clifford Allbutt for the following note:

May I on my own part, on the part of my college of Gonville and Caius, of this University, and of a still wider circle, address to you a few words in memory of our colleague and friend Robert Michell, whose death, almost on the field of battle, we are deploring. How he met his death while leading a volunteer party to bring in wounded men lying then two days out between the forces, I need not narrate. It is sufficient to say that his glorious deeds are in everyone's mouth.

Michell's medical practice was chiefly among the undergraduates and younger graduates of the University; over the young men he had an ascendancy almost unquestioned and most beneficent. Besides his medical abilities, he was manly, courageous, almost fiercely straightforward; and he ruled the young men with a decision and good sense which they fully understood and respected. In former years a good oarsman, and up to his departure for the war still active as a coach on the river, he was justly regarded as an authority on the hygienic aspects of athletics, and generally acted as referee on behalf of the captain of the University boat. As every now and then Michell was good enough to invite me to the discussion of some of the health problems arising out of the various kinds of athletics, I had opportunities of extending my own experience in this department of medicine, especially in cardiac cases and in the phenomena of adolescent albuminuria. Some little of Michell's work on heart stresses is published, but, had he been spared to us, there was much more to come. On the question of adolescent albuminuria unhappily he had published nothing, but his notes and experience in this difficult subject would have been very valuable. One case I remember caused him much anxiety. In the urine of a fine oarsman, a mainstay of the University boat of the year, Michell found albumin in abundance—so much that, on heating, it turned almost solid. The race was about a month away; what was to be done? We thought that, for his own sake as well as for that of the boat, the man had better retire; that he would probably break down in training. However, after much consideration, the captain decided that for so good an oar he would take the risk. This man, always with his urine full of albumin, went through training without turning a hair, rowed in the race doing his full work, and has, I believe, continued in good health ever since. This is but an instance of the kind of work Michell did here, and of the services he gave to the athletic sports.

But he did far more than this: Michell was an example of a man in busy general practice who transacted it all in the spirit, method, and assiduity of science. With some skill as a mechanic, he worked out all his cardiac cases with close precision and ingenuity. His inner consulting-room was like a joiner's shop: tools and materials scattered about, piles of notes on the tables, endless strips of graphic curves—polygraphic, electrographic, curves of blood pressures, chest diagrams, and so forth. And his patients were so accustomed to his ways that they let him do anything with them he liked; he had free access to their rooms at any hour, and thus under a variety of conditions obtained records which are perhaps unique. For instance, he would get morning blood pressure records from men who had slept all night, and were hardly awake. The cuff had been adjusted over night, and at 7 a.m. the patient, seeing that it was "only Michell" would have his pressures taken before any effort, and almost without knowing it.

Michell was so impressed by the complexity and obscurity of cardiac problems that it was difficult to persuade him to publish any of his researches, and I fear for the same reason that we shall find little left ready for publication. For Allbutt and Rolleston's *System of Medicine* Michell had contributed a few short paragraphs, and I know he had collected some further notes for a separate edition of my article in that *System* which probably now will not see the light. Nevertheless, in one way or another, Michell's researches on cardiac disorders became well known both to the profession and to the public, so that his opinion was sought in many responsible cases. Sometimes he attended scientific discussions on cardiac questions, but the loose general statements which too often find their way into such conversations made him angry. Likewise he was liable to be moved to wrath if on one of his cases another opinion were given on half the consideration and often on less experience than he had given to it. On such occasions, like Laurence Boythorne, he would express himself with as much vigour and point and with as little malice.

This independent and warm temper stood him and the British army in good stead in the South African war, through which he served with distinction. His combats with red tapists were Homeric, and in those days the R.A.M.C. had scarcely entered upon its present splendid career. As on the historic breaking open of the cupboard of Miss Nightingale, so on one occasion Michell signalled that if certain supplies were not granted immediately, he, being a volunteer, would leave for England at once and report the circumstances to the War Office. The threat was effectual.

Thus a man, who to his intellectual endowments added a rare strength, courage, and independence of character, has made a glorious end; for our own loss we may grieve, but for him we cannot repine. It is reported that when he was struck he said, "Never mind me, it is well worth it; we have brought in seven of the men."

Died on Service.

Temporary Colonel Sir Victor Horsley, A.M.S., died of heatstroke at Amara, in Mesopotamia, on July 16th, aged 59. A full obituary appears at p. 162.

Lieutenant-Colonel Pulteney Charles Gabbett, Indian Medical Service (ret.), died in Mesopotamia on July 11th, aged 47. He was born on October 19th, 1868, the son of the late Lieutenant-Colonel Joseph Gabbett, C.B., of the 95th Regiment, was educated at St. Thomas's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1891. Entering the I.M.S. as surgeon-lieutenant on July 27th, 1892, he became surgeon-captain on July 27th, 1895; major on July 27th, 1904; and lieutenant-colonel on July 27th, 1912, retiring a month later, on August 26th, 1912. After leaving India he took up practice at Ottery St. Mary, in Devonshire, but was recalled to duty for the war. He had previously served on the North-West Frontier of India, in the Tirah campaign of 1897–98, and held the frontier medal with two clasps; but for several years before his retirement had held the posts of professor of surgery in Madras Medical College, and first surgeon to the Madras Hospital. He was the author of two small books—*Four Common Surgical Operations in India*, and *A Manual for Women's Voluntary Aid Detachments*.

Lieutenant S. W. Burrell, R.A.M.C. (temporary).

Wounded.

Captain C. A. Bernard, R.A.M.C. (temporary).
Captain W. A. Coats, R.A.M.C. (temporary).
Captain H. N. Goode, R.A.M.C. (temporary).
Captain Andrew Grant, R.A.M.C. (temporary), attached to the Royal Fusiliers.
Captain A. Hamilton, R.A.M.C.(T.F.).
Captain R. M. Miller, R.A.M.C. (temporary).
Captain J. W. N. Roberts, R.A.M.C. (temporary).
Captain F. Sanders, R.A.M.C. (S.R.).
Captain L. D. Shaw, R.A.M.C. (temporary).
Captain H. P. Thomasson, R.A.M.C.(T.F.).
Captain H. P. Whitworth, R.A.M.C. (S.R.).
Lieutenant C. B. Davies, R.A.M.C. (temporary).
Lieutenant G. J. Fraser, R.A.M.C. (temporary).
Lieutenant M. G. Pettigrew, R.A.M.C. (temporary).
Lieutenant C. M. Rowlette, R.A.M.C. (temporary).
Lieutenant A. J. R. Taylor, R.A.M.C.

Captain Hamilton had previously been reported as wounded, a fortnight ago, and Captain Roberts as missing last week.

Prisoner of War.

Captain W. R. W. Haight, Canadian Army Medical Corps, reported as missing in the beginning of June, has now been reported to be a prisoner of war.

DEATHS AMONG SONS OF MEDICAL MEN.

Bidwell, Leonard John, Midshipman, R.N., eldest son of the late Leonard A. Bidwell, F.R.C.S., accidentally killed on July 17th. He was born in 1897, joined Osborne at Easter, 1910, and served in H.M.S. *Cumberland*, being wounded in the Cameroons in October, 1914.

Eminson, R. A. F., Second Lieutenant, B.A.Camb., who fell in action on July 20th, aged 24, was the son of Dr. T. B. F. Eminson, of Scotter, Gainsborough. His education began at Terra Nova School, Birkdale, whence he obtained an entrance scholarship at Epsom College, and, after three years, passed on to Downing College, Cambridge, obtaining the B.A. in the natural science tripos, with a special diploma in agriculture. When war broke out he was in Northern Rhodesia, investigating the life-history of the tsetse fly for the British South Africa Company, but obtained leave, and returning to England, went through an officer's training course at Cambridge, and then passed into the King's Royal Rifles, and afterwards into the Machine Gun Corps. He received commendation for the handling of his gun at the Crassier at Loos on the explosion of a German mine on the night of April 5th–6th; and was expected home on short leave when extended hostilities intervened.

Fountain, John Alfred Arnott, Second Lieutenant King's Own Yorkshire Light Infantry, second son of Dr. E. Osborne Fountain, of Crossley House, Ruislip, Middlesex, killed on July 1st, aged 23. He got his commission on February 23rd, 1915.

Head, Leslie Dymoke, Captain King's Own Yorkshire Light Infantry, younger son of Dr. Percy Head, of the Gables, Staines, killed July 2nd, aged 28. He became lieutenant on October 30th, 1914.

Macnamara, Carroll Charles, eldest son of N. C. Macnamara, F.R.C.S., of Chorley Wood, Herts, at one time Treasurer of the British Medical Association, died of wounds received on July 1st. He was educated at Winchester, and got his first commission in 1896. He served in the South African war, and was afterwards appointed A.D.C. to Lord Milner, the High Commissioner. In 1904–05 he served in India, and in 1905–06 with the Chinese regiment at Wei-hai-Wei. He joined the Egyptian army on June 20th, 1906, commanded the Equatorial battalion, and received the Order of the Nile. He became major on December 20th, 1914. From Egypt he went to Gallipoli, where he was wounded. In May last he rejoined the Royal Irish Rifles as commanding officer of a battalion.

Macqueen, Thomas Malcolm, Lieutenant East Lancashire Regiment, second son of Dr. T. Macqueen of Bolton House, Eastbourne, killed on July 15th, aged 29. He was educated at Eastbourne College, went to China in 1912 in the service of the Yangtze Insurance Association, and left Shanghai in December, 1914, to join the army. He got his first commission on February 6th, 1915, and had been at the front since last July.

Marshall, J. Woodall, Lieutenant Northumberland Fusiliers, son of Dr. Marshall of South Shields, killed in July. He was educated at Prior Park, Bath; Ratcliffe College, Leicester, and Oakham; also studied at Hanover and Bruges, after which he became a student of law in Newcastle. He had served in the Northumberland Yeomanry, but failed to pass the sight test for active service. After doing ambulance work in Belgium, he joined the Foreign Legion in France. In February, 1915, all British *légionnaires* were transferred to the British army. On March 3rd, 1915, he got his commission, went to the front early in 1916, and had gained the Military Cross for the rescue of a wounded man under heavy fire.

Mason, Alan E. G., Second Lieutenant Leicestershire Regiment, second son of Dr. H. Mason of Leicester, died on June 30th of wounds received the day before, aged 20.

Meade, Horace W., Captain Royal Sussex Regiment, youngest son of the late Dr. Warren Meade, of Alverstoke, Hants, killed on July 13th, aged 31. He became lieutenant on November 2nd, 1914, and got his company on December 30th, 1914.

Parr-Dudley, John Huskisson, Second Lieutenant Royal Fusiliers (City of London Regiment), eldest son of Dr. Parr-Dudley, of East Malling, killed on July 1st, aged 20. He was educated at Cranbrook School, Kent, where he was head of the school, and captain of cricket and football. He then studied engineering at Faraday House, where he gained a silver medal. He got his commission on January 25th, 1915, and went to the front in July, 1915.

Phillips, Christian Gibson, Major King's Own Royal Lancaster Regiment, younger son of the late Dr. Robert Phillips, of Bromley, Kent, killed on July 10th. He served with the mounted infantry in the South African war, and was wounded. His regiment was in India when the war began, and reached France in January, 1915. He was wounded on March 23rd, 1915, rejoined, was again invalided in September, and went to the front again last month. Three of his four great-grandfathers served at Waterloo.

Spencer, Arthur Egerton, Lieutenant Sherwood Foresters (Notts and Derby Regiment), son of Dr. Macready Spencer, of Builth Wells, killed in the battle of the Somme, aged 20. His first commission was dated March 13th, 1915.

MEDICAL STUDENTS.

Dunn, W. J., Second Lieutenant King's Own Scottish Borderers, killed, was the only son of Captain Peter Dunn, second master at the Laurieknowe School, Dumfries, who is at present serving with the Royal Scots at Cyprus. He was studying medicine at Edinburgh University before the war, and had been at the front for six months.

Kennedy, Robert, Second Lieutenant Royal Scots Fusiliers, aged 20, who has been killed, was the elder son of Captain Ross Kennedy of Ayr. After being educated at the Ayr Academy he proceeded to the University of Glasgow, and had just completed the first year of his medical course when he received his commission in June, 1915.

Laidlaw, J. Leslie, Second Lieutenant Argyll and Sutherland Highlanders, who died of wounds, was the only son of the Rev. John Laidlaw of St. John's Manse, Kelso. He received his commission in October, 1914, and went to France in February last. He had completed the second year of his medical course at the University of Edinburgh.

Mullally, Desmond, Captain Northumberland Fusiliers, youngest son of Mr. William Mullally, of 441, Sauchiehall Street, Glasgow, died of wounds received on July 1st. Before the war he was a medical student at Glasgow University, where he was in the O.T.C. He was slightly wounded on June 26th, but remained on duty, and received a fatal wound five days later.

Stewart, James Fleming, Corporal Royal Engineers, aged 22, killed in action on June 28th, was the son of the late Rev. J. Stewart of Prenmay, Aberdeenshire, and was a medical student at the University of Edinburgh.

NOTES.

TRANSPORT OF WOUNDED BY AEROPLANE.

THE possibility of using aeroplanes for the discovery and transport of wounded men was a great deal canvassed for some years before the war, and some experimental flights were made in this country. In May, 1912, the Association des Dames Françaises submitted to the French War Minister a suggestion that ten biplane ambulances should be attached to each army corps. During the French manœuvres of the same year Dr. Emile Reymond, who was killed early in the war, was instructed to make experiments; he reported that the aeroplane would be useful in the discovery of the wounded, in carrying dressings, and as a means of communication between medical stations, but said nothing as to the transport of wounded, with regard to which he had not been instructed to inquire. The French Air League thereupon took steps to call an international conference of Red Cross societies for the purpose of securing the neutralization of "sanitary aviators," but the War Minister formed the opinion that the transport of wounded by aeroplane was not practicable, and the matter dropped. According to Professor R. Blanchard (*Paris Médical*, July 15th), aeroplanes were used for the transport of wounded on a small scale when the Serbian army, retreating through the snow of the Albanian mountains, was hotly pressed by the Bulgarians at Prizend. In all thirteen sick or wounded men were carried to Scutari and Vallona, the distances varying from 150 to 250 kilometres. In one case a journey of 330 kilometres was made in two stages. The machines, which had seen much service, were in bad condition, and the dangers encountered by the pilots were very great.

England and Wales.

UNIVERSITY OF WALES.

AT the court of the University of Wales, held at Aberystwyth last week, a resolution was adopted on the motion of the Principal of the University College of North Wales expressing the opinion "that adequate teaching freedom for the staffs of the three constituent colleges can be secured without the disruption of the existing federal university." In supporting it the Principal of the University College of South Wales said that the present charter was unworkable. The system did not give the young people of Wales the same chances as the young people of England. The student's only aim in life seemed to be to pass examinations. Greater freedom should be given to teachers, and the court ought to be ready for the changes which were surely coming. Before this a resolution had been adopted, on the motion of Mr. William George, expressing the opinion that the Royal Commission on higher education in Wales should visit Wales for the purpose of taking evidence of a non-official character. In the course of the discussion Welsh members of Parliament came in for a good deal of criticism on the ground of their alleged indifference to the matter, but it was stated that at the request of the chairman of the Royal Commission they had formed a committee to deal with it.

MATERNITY REST HOME AT LIVERPOOL.

A maternity rest home was opened in Liverpool last week, designed to furnish expectant mothers with the necessary rest and medical attention that may be required. Patients suffering from the diseases of pregnancy, endangering either the life of the mother or of the child, will have the first claim on the home. It contains twelve beds, and owes its origin to the staff of the Liverpool Lying-in Hospital, who have had the sad experience at times of the results of want of care, nursing, and nutrition

during the later months of pregnancy. These results have seriously mitigated the usefulness of such lying-in institutions throughout the country. It is greatly to the credit of Liverpool to have been a pioneer in this work, and the scheme will be watched with interest throughout the country. The nurses are those training to be midwives, and it is considered that as midwives they should have some practical knowledge of the disorders of pregnancy which such a home will afford. The guiding principle is to do everything possible to stem the falling birth-rate by antenatal care and assuring healthy life from the very outset. There is no doubt that the pregnant state among the industrial classes is one that is often overstrained and rendered burdensome by the inability of the mother to secure that rest and quietude which those more fortunately placed in the social scale are able to have. Like the crèche system, it is a tacit admission that civilization has not yet risen to the high ideal that the home should be the best place for, and have the first claim on, the mother.

LIVERPOOL PORT SANITATION.

The port sanitary authority of Liverpool, in its annual report for 1915, states that during the year no fewer than 72,156 rats were caught on the quays, vessels, warehouses, sewers, and other places. None of the rats caught showed any evidence of plague, and the same holds good for those rats that were found dead in ships' holds. Where these are found in undue numbers, thorough disinfection of the ship is carried out by sulphur fumigation.

Of imported foodstuffs, 247½ tons of beef, mutton, and pork were condemned as food but utilized for industrial purposes; 3,015 tons of fruit and vegetables were condemned. The number of infectious cases landed from vessels in 1915 was 204; the average of the ten years preceding 1914 was 114.7. With regard to emigration, in 1915 the number of emigrants that left the port was 75,387, being a decrease of 157,567 on the previous year.

Scotland.

THE Scottish Red Cross has voted £5,000 towards the cost of an annexe to be built at the Scottish National Red Cross Hospital at Bellahouston, to provide 200 beds for orthopaedic cases. It is expected that the annexe will be able to deal with 300 or 400 patients a day. The equipment will include radiant heat baths, hot and cold douches, a pool bath, and a whirlpool bath, as well as an electrical installation. Similar treatment is being provided at Bangour Hospital near Edinburgh, at Oldmill, Aberdeen, as well as at Glasgow.

At the annual meeting of the Glasgow Dental Hospital the Chairman said that the managers had under consideration a scheme for bringing the work of the hospital prominently before employers with a view to their having prospective employees medically and dentally examined before employment. There were certain trades, he said, such as those concerned with the preparation of food, where such a scheme would be very beneficial to the employees and also to the public interest.

TUBERCULOSIS AND HOUSING.

At a meeting of the Insurance Committee of the County of Lanark on June 28th a resolution was unanimously adopted expressing the view that no scheme for the prevention of tuberculosis could be considered complete if it failed to take into account the unsatisfactory state of housing of the county and the great decrease in the number of new houses erected within recent years. Statistics were quoted showing the decrease in housing accommodation in the Middle Ward of Lanarkshire due to increased population, the decline in building, and the closing of old and bad properties by the public health authority.

DR. FRANKLIN C. MCLEAN, assistant resident physician in the Hospital of the Rockefeller Institute for Medical Research, New York, has been appointed professor of medicine and head of the Union Medical School, Peking, one of the institutions of the China Medical Board of the Rockefeller Foundation.

Correspondence.

THE NEED FOR MEDICAL SUPERVISION IN THE CARE OF THE PREGNANT WOMAN.

SIR,—In his valuable paper on this subject in your issue of July 8th Dr. Archibald Donald draws attention to the fact that antenatal *treatment* of mother and child may easily be overdone, and that in such cases the results would not be commensurate with the effort made, but this does not justify his conclusion, on p. 34, "that the supervision of all pregnant women would mean a great deal of unnecessary trouble, as in the majority of cases in which danger threatens during pregnancy the patient will voluntarily apply for help." Is this so? When does a woman with a contracted pelvis or a pelvic tumour apply for help? When in labour. When does a pregnant woman who has unsuspected and serious heart mischief seek advice? When heart failure is established. When does a woman with toxic albuminuria consult a doctor? Perhaps when puerperal eclampsia supervenes. When does a woman with retroversion of the gravid uterus seek relief? Often not till impaction and retention of urine have occurred. Much, of course, depends upon what is meant by "medical supervision."

No doubt Dr. Donald asks all his patients who are primigravidae to allow him to ascertain by a sufficient investigation that no organic disease is present and that there is no physical condition likely to obstruct or unduly prolong labour. He also, even in multigravidae, makes no exception to his stated ideal that "routine examination of the urine is most important and would reveal many of the cases of toxaemia which require treatment" (p. 35).

If this is so, all Dr. Donald's patients come under his medical supervision during their pregnancies, and I am sure he does not consider such supervision to be a "great deal of unnecessary trouble," for he knows what disasters may thereby be averted. Other varieties of supervision in the case of poor women by health authorities, schools for mothers, health visitors, etc., may lead to improved environment, diet, clothing, etc., and hygienic education can be advanced by the same agencies.

Knowledge of the causes and means of prevention of abortion and stillbirths has to be obtained, not only by statistics and clinical observation, but by steady and laborious research, as I have tried to show in lectures[1] published in the JOURNAL in 1914.

In future, perhaps, physiological chemistry may detect the origin and nature of the toxins formed in labour, and may explain the circumstances in which the toxins attack special organs, such as kidneys, liver, intestinal or ductless glands. Possibly, too, antidotes may be discovered and rendered available so that the treatment of these toxaemias by rest in bed, milk diet, and purgatives will be usefully and scientifically extended.

Research is also required to ascertain the frequency and extent of syphilis as a cause of antenatal disease and death. In women who are known or suspected to have been infected, and who have had alternating abortions and stillbirths, pointing, as Dr. F. W. Mott[2] has shown, to syphilis, spirochaetes are found in most of the stillbirths, but rarely in the abortions. Why is this? It is not rational to declare that this proves that the abortions in such cases are not due to syphilis whilst the stillbirths are. Now that the Local Government Board is prepared to give the local health authorities 75 per cent. of the cost of diagnosis and treatment of syphilis, medical supervision of such cases will be especially valuable.

It is a difficult thing to get pregnant women to place themselves under medical supervision. It is satisfactory to know that Dr. Donald and Dr. A. Newsholme disapprove of compulsory notification of pregnancy. It is obvious that many pregnant women would oppose notification if compulsory, and the result would be that they would delay engaging their accoucheur or consulting him when ill.

Education will in time prove to women the advantages of coming under medical supervision, and this would necessarily constitute a *voluntary* notification of pregnancy to their own doctor without any publicity.

[1] BRITISH MEDICAL JOURNAL, February 14th, 1914, p. 355, and April 25th, 1914, p. 902.
[2] *Proc. Roy. Soc. Med., Obstet. Section*, 1914, pp. 283-290.

Dr. Donald's pithy concluding sentence, singled out in your convincing leading article in the same issue, is appropriate as far as it goes. "The solution of the matter," he says, "is not in statistics and notification but in education and research." The sentence would have been ideal if he had interpolated "medical supervision" between "education" and "research," for "medical supervision" is the result of the "education" of all classes, and affords the opportunity for "research," and is therefore the pivot of the whole matter.

The discussion on this subject, to be held on November 2nd in the Obstetric Section of the Royal Society of Medicine, will be a fit opportunity to have "medical supervision" considered in all its bearings.—I am, etc.,

London, W., July 18th. AMAND ROUTH, M.D., F.R.C.P.

PROPOSED MIDWIVES ACT FOR IRELAND.

SIR,—A committee, consisting of distinguished medical gentlemen, is being set up to confer on the subject of the extension to Ireland of the Midwives Act, with a view of bringing "under the direction of a registered medical practitioner" all unregistered handy women, and establishing those who register by obtaining a certificate of character—apart, of course, from one of competence—in an impregnable position to compete with a trained nurse of the area within which they ply their trade, acting under cover of the dispensary medical officer whom they may summon on a red ticket.

As this might be considered an exaggeration I append Section 2 of the Scottish Act, which is as follows:

> From and after January 1st, 1922, no woman shall habitually and for gain attend women in childbirth otherwise than under the direction of a registered medical practitioner unless she be certified under this Act, and women so acting without being certified under this Act shall be liable on summary conviction to a fine not exceeding £10.
>
> Provided this subsection shall not apply to registered medical practitioners, or to any one rendering assistance in a case of emergency.
>
> Any woman who within two years from the date of this Act coming into operation claims to be certified under the Act shall be so certified provided she produces the necessary certificates of training from certain recognized hospitals, or produces evidence satisfactory to the Central Midwives Board that at the passing of this Act she has been for at least one year in bona-fide practice as a midwife, and that she bears a good character.

In industrial areas, where close observation is possible, there is money for some in the legalization of this system; but let not medical men in rural Ireland believe there is anything for them but worry and trouble, and a higher death-rate amongst parturient women. This is a sad prospect, but the following amendment proposed to 22 (4) gives convincing proof of its accuracy:

> Clause 22 (4): Add after words "such fee," "or unless the medical practitioner summoned by the midwife be summoned under the Poor Law Regulations (under provisions of the Medical Charities Acts)."

Let me say through your journal to the gentleman who suggests this amendment that I believe its insertion is immaterial, as the result, under any circumstances, would necessarily be the same; but I will add that I did expect from him a protection rather than the legalization of a penal clause. That he appreciates the position is evident from the following extract from the supplement of the *Medical Press and Circular*:

> The object of the Midwives Act was that every woman should have skilled attendance by a registered medical practitioner or by a certified midwife. An uncertified nurse could only attend under the personal supervision of the medical practitioner, and thus get rid of the handy-woman as quietly as possible. But at whose expense?

I believe the giving of countenance to handy, infection-carrying, ignorant women in districts where trained nurses are provided under Poor Law regulations is a retrograde step, prejudicial to the public welfare and the lives of mothers and children, which are now recognized as the greatest asset of the State; and I would propose to those gentlemen who are now considering the question to drop their amendments penalizing the medical officers and insert one of an exactly opposite nature, the insistence on which will awaken the public bodies and the central authority to the necessity for their co-operation in the extinction of a system fraught with danger to the ignorant public.

Much good has been done by those bodies, both central and local, and what remains to be effected could be easily accomplished within a reasonable time by proper co-operation involving a due recognition of its necessity, which the committee of inquiry might take steps to render evident between those in charge of the public health and the medical profession.

In conclusion, I would suggest, in the event of the Act being extended to Ireland, an amendment exempting dispensary medical officers who have trained midwives employed under the Medical Charities Acts in their districts from the obligation of attending maternity cases on red tickets with registered or unregistered handy women where the service of the trained midwife is available.—I am, etc.,

Ardfinnan, July 19th. J. POWER, M.B.

THE TREATMENT OF CHLORINE GAS POISONING BY VENESECTION.

SIR,—Captain Stuart Hebblethwaite's article[1] reminds me that many years ago I was asked to see a man suffering from the effects of inhaling the fumes given off when a large receptacle containing nitric acid was broken. The symptoms closely resembled those seen in soldiers suffering from poisoning by chlorine gas. The patient was bled to nearly a pint, and at once his lividity passed away, his breathing, previously very distressed, became more easy, his pulse greatly improved, he felt better in every way, and ultimately recovered completely. The impression we formed at the time was that the venesection saved his life. Because of this case, and because of the symptoms produced by inhaling chlorine gas, I, more than a year ago, suggested in conversation with a member of the R.A.M.C. in France that many men afflicted with poisoning by chlorine gas would be benefited by venesection, and it is a pleasure to learn from Captain Hebblethwaite that this is correct.—I am, etc.,

W. HALE WHITE,

London, W., July 22nd. Lieut.-Colonel R.A.M.C.(T.)

*** Dr. William Bramwell (Liverpool) writes with reference to a sentence in Captain Hebblethwaite's paper on the treatment of chlorine gas poisoning by venesection as "a new line of treatment" to point out that he (Dr. Bramwell), in a letter published in this JOURNAL on September 18th, 1915, proposed resort to venesection in gas poisoning. The idea had occurred to him after reading the articles of Sir E. A. Schäfer and Dr. Walter Broadbent on chlorine gas poisoning.

DEATH AFTER NITROUS OXIDE-OXYGEN AND LOCAL ANAESTHESIA.

SIR,—Dr. McCardie's case (p. 109) is one of great interest. Although reported with the care which is habitual with the narrator, some points are left doubtful. I assume negatives, and if I am wrong in so doing my theory of the mechanism of the death is rendered less terrible. We know from recorded cases that the myocardium does undergo acute dilatation when nitrous oxide and oxygen are being administered. This condition may be remediable in very brief operations, the chances of its being so are fewer when the administration is prolonged. The condition of the heart muscle plays a dominating part in determining the result. When its resiliency is good or fair the heart contracts; when it is feeble, ex-sanguine or pathologically thin, the heart remains dilated and its systole weakened almost to extinction. As a result, the peripheral circulation tends to be insufficient, and the two areas most damaged are the central nervous system and the heart muscle itself. I place them in order of importance, not in the order of physiological occurrence. These things being so, it seems plausible to assume that the medulla oblongata in this patient became spanaemic if not exsanguine and the nerve controls ceased to functionate. A relatively exsanguine brain becomes more affected by any narcotic, so that the dose of morphine and scopolamine, especially as they were not guarded by atropine—a respiratory excitant—would cause persistent unconsciousness. The contracted pupils point to this condition. The oxygen introduced would, in the absence of normal circulation and respiration, be powerless to segregate to the tissues, and so would be inert.

[1] BRITISH MEDICAL JOURNAL, July 22nd, p. 107.

The fluid given intravenously, even if it reached the heart, would only increase that organ's disabilities by adding to its labour, since we are told that little or no haemorrhage occurred.

The points one would like to learn are: Was the cardiac area percussed before the administration and after the initial difficulties revealed themselves? Was any attempt made to massage the heart from the abdominal route? The return of the pulse "very good in volume" does not, I think, invalidate the theory advanced; it was the inevitable result of closing the abdominal wound, which restored the normal haemo-dynamics of the circulation, but the heart remained dilated, and, as greater claims were made upon it, it ultimately failed to respond to them. Probably the increased pulse volume actually assisted in bringing about the collapse.

The old lady who was similarly treated without mishap probably possessed a more resistant heart muscle, and so survived. We are not told but may assume that semi-inversion was practised; was the Trendelenburg position in use during the operation? I have not referred to the possible effect of surgical shock, since it is assumed that the analgesia practised blocked centripetal stimuli. In this connexion it may be remarked that some observers—notably Tyrrell Gray—believe that it is impossible to completely block the traumatic effects of abdominal operations.—I am, etc.,

London, W., July 24th. DUDLEY W. BUXTON.

STATE PROVISION FOR THE TREATMENT OF VENEREAL DISEASE.

SIR,—In your leading article criticizing the Regulations issued by the Local Government Board for the State provision for the diagnosis and treatment of venereal disease you rightly take exception to the use of the term "salvarsan and its substitutes," and remark, advisedly, that it is quite possible that "a better drug, not less effective and safer in use, than salvarsan may be discovered." Salvarsan was introduced at a time when the medical profession was still under the hypnotic influence of German *Kultur*, and it is probable that, had its appearance been delayed till after the war—when it is to be hoped this hypnotic influence will have become considerably modified—its reception would have been less enthusiastic. There is too great an air of finality about the term "salvarsan and its substitutes," which is calculated to mislead the public into the belief that these drugs represent the whole science and art of the treatment of syphilis. The truth is that salvarsan, and all the other complex organic compounds, arsenical or otherwise, which have been used of late in the treatment of syphilis, are still on their trial, and their ultimate effect on the disease and on the patient still remains to be determined. Indeed, more than one syphilologist has drawn attention to the apparent increase of nervous affections since salvarsan came into general use, and one observer even states that the onset of degenerative myelitis and encephalitis (tabes and general paralysis) may be precipitated by its use.

The practical advantages of salvarsan and the other arsenical compounds are rapidity of action and convenience in administration. Whether their action is more rapid than that of mercurial inunction combined with potassium iodide and sulphur is open to question, but the administration of a few injections is no doubt more convenient and more impressive to the patient than the tedious performance of inunction, especially when dealing with large batches of men, as in the army and navy. In these services the immediate results have been good with salvarsan, kharsivan, and galyl, but it must be borne in mind that all these patients are picked lives, and therefore more able to withstand their effects. The routine administration of these drugs to all and sundry of the civil population, on the other hand, is not so free from danger. I venture to suggest, therefore, that the term "approved methods of treatment" would be better than "salvarsan and its substitutes," since it would include the older methods, which have been proved of value, as well as the newer methods, which are still in the experimental stage. The treatment of syphilis should be eclectic, not routine.

Another point open to criticism concerns the regulation providing facilities for the laboratory examination of specimens sent by the medical practitioner. This is excellent if used in the right way, but is open to the danger of leading the practitioner to depend upon the laboratory report for his diagnosis. Thus, the diagnosis is made by one who has not seen the patient. Laboratory tests are valuable when taken in conjunction with clinical evidence, but should never supplant it.

If more attention was given to this point and greater opportunities afforded to medical practitioners and students for the clinical study of venereal diseases the campaign against these diseases would be more likely to succeed.—I am, etc.,

London, W., July 23rd. C. F. MARSHALL.

THE FASTING TREATMENT OF DIABETES.

SIR,—Since the publication of my article on the treatment of diabetes, in the JOURNAL of April 22nd, p. 587, I have received many inquiries, and I trust you will allow me a little space in order to emphasize the important points in the treatment.

For several years I have carried out the treatment described, and find it beneficial in all cases, but more especially in those in which there is evidence of toxic absorption from the bowel. In alimentary toxic absorption the indol and skatol formed in the alimentary canal appear in the urine in part as compounds of glycuronic acid. It is a clinical advantage, therefore, to distinguish between glycuronic acid and sugar. They both respond to Fehling's solution, but glycuronic acid does not answer the fermentation test, which is done as follows:

Place a small piece of mercury in a test tube and fill up with urine to which a small piece of yeast has been added. Cork and invert the test tube; keep it at blood heat for several hours, and if sugar is present, CO_2 will collect at the upper part of test tube. If glycuronic acid is present, it shows contamination from the bowel, and though the excretion of sugar has been controlled, there still remains this contributory cause of the diabetes which ought to be got rid of.

The essential point in the treatment I recommend is the cleansing and disinfection of the bowel. Fasting is necessary to enable this to be done more quickly, for if the bowel is loaded with food, how can it be cleansed? Castor oil is very suitable, but good results can be obtained with other opening medicines. When castor oil is administered, there are no complaints of irritation at the anus, as is sometimes the case when magnesium sulphate is taken. The second dose of opening medicine is given at the conclusion of the fast so as to remove the alimentary residue as quickly as possible.

It is necessary that the fast be absolute, as ingestion of even small quantities of nourishment would keep up putrefactive processes in the bowel, and render the condition more difficult to combat. The maximum period for a fast does not need to exceed twenty-four hours; the duration of the fast should be rather longer than would suffice for a thorough emptying of the bowel with the double laxative. Eighteen hours is a very suitable period, and one which patients readily take to. I find no advantage in subjecting the patient to longer periods.

With regard to meals, I limit the intake of starch, but get no advantage from cutting it off entirely. Faulty starch digestion is a symptom and not a cause of diabetes. Between the fasts I allow a fairly generous diet. Repeated observations have forced me to the conclusion that it is unnecessary to tie the patient down to too rigid a diet, especially if the bowel is periodically cleansed.

The results obtained by cleansing the bowel and judicious fasting are far superior to those obtained by other methods of treatment. The treatment can be practised with the same beneficial results by the physician in a busy working-class practice as well as by the specialist in a well-organized hospital.—I am, etc.,

Perth, June 19th. JOHN HUME, M.D. and D.P.H.

SIR,—I think that all who have had practical experience of Allen's treatment for diabetes will agree with Dr. Spriggs that it gives satisfactory results in the majority of cases, but that as yet it is too early to speak of its being a cure. One of the most striking effects of the treatment is the way in which both the acidosis and glycosuria can be controlled in most instances, especially if care is exercised in adding protein and fat, as well as carbohydrate, to the diet. I have previously pointed out the important influence that the protein intake

in the diet has on the excretion of sugar in diabetes, and advised that it should be regulated by the effect on the total nitrogen output in the urine.[1] The adoption of an empirical standard for the protein intake seems to me to be one of the weak points of Allen's plan, and I think that better results are obtained if the method referred to is adopted. I can confirm what Dr. Spriggs says with regard to the need for close supervision, but I do not find that there is any difficulty in increasing the food after the initial fast, provided that the increase is made very gradually, properly prepared food tables are used, and the effects on other constituents of the urine beside the sugar are carefully watched. The chief trouble I have encountered has been the difficulty of advancing slowly enough in face of the complaints of increasing hunger many patients make when feeding is resumed, for the pangs of hunger are often felt more keenly when a little food is being taken than when none is allowed. I also find that Joslin's tables do not agree with my own observations; I have therefore prepared a chart for the use of my patients, which may be useful to others who wish to try the method.

Average Servings, showing the Carbohydrate (Sugar) Content.

	Oz	Sugar. Grams.
GROUP I.		
Raw Vegetables:		
Lettuce	2	1.5
Endive	2	1.5
Sorrel	2	1.7
Cucumber	2	1.8
Watercress	1	1.9
Boiled Vegetables:		
Vegetable marrow	7	0.4
Seakale	5	0.5
Cabbage	6	0.7
Cauliflower	6	0.7
Lettuce	5	0.8
Turnip	5	1.0
Celery	4	1.0
GROUP II.		
Raw Vegetables:		
Radishes	1	2.0
Celery	4	3.5
Onion	1	3.5
Boiled Vegetables:		
Spinach	3	2.5
French beans	3½	3.0
Parsnip	6	3.0
Onion	2½	3.5
Asparagus	4	3.6
Leeks	4½	3.8
GROUP III.		
Raw Vegetables:		
Tomato	3½	4.0
Mushroom	2	4.0
Boiled Vegetables:		
Greens	7	4.0
Brussels sprouts	4	4.0
Carrots	4	4.0
Salsify	1½	4.0
Beetroot	2	5.0
Fruit (Raw):		
Rhubarb	4	4.0
Lemon	2½	4.0
Lemon juice	1½	4.0
Strawberries	2	4.3
Green olives	1¾	5.0
Peach	3	6.0
Raspberries	2	7.0
Nuts (Edible Part):		
Brazils	1	2.5
Filberts (fresh)	1	3.3
,, (dry)	1	3.7

	Oz.	Sugar. Grams.
GROUP III *(continued).*		
Walnuts (fresh)	1½	4.0
,, (dry)	1	4.2
Almonds	1	5.0
GROUP IV.		
Boiled Vegetables:		
Fr. artichoke	6	8.0
Green peas	3	13.0
Fruit (Raw):		
Fresh pine	3	9.0
Blackberries	3	9.4
Fresh currants	3	11.0
Gooseberries	3	11.0
Apricot	2	14.0
Cherries	3	14.0
Nuts (Edible Part):		
Cocoanut	1	8.0
Chestnut	1	12.0
GROUP V.		
Fruit (Raw):		
Grapes, av.	4	17.0
Water melon	10½	20.0
Orange	6	20.0
Apple	5	20.0
Plums	4	22.0
Pear	5	22.0
Grape fruit	10	30.0
Banana	7	44.0
Starchy Foods:		
Bread, av.	1	15.0
Hominy, boiled	3	15.3
Oat porridge	4¾	15.6
Macaroni, boiled	3½	15.8
Rice, boiled	2¾	15.8
Potato, chips	2	27.0
,, boiled	5½	31.0
,, baked	4½	32.0
MISCELLANEOUS.		
Lobster (edible part)	3½	0.6
Crab (edible part)	3½	0.8
Cream, av.	¾	1.0
Pickles, mixed	1	1.0
Milk	1	1.4
Caviare	1	2.3
Cheddar cheese	2½	3.0
Liver, av.	3	4.3
Oysters (edible part)	1	4.4

Before commencing the treatment it is desirable that it should be clearly explained to the patient so that he may thoroughly understand the reasons for what he will have to undergo, for considerable will power on his part and some firmness on the part of the physician are frequently necessary to carry it to a successful issue. Since the misplaced sympathy of relatives and friends often has a disturbing influence, the treatment usually answers best when carried out in a nursing home or institution away from such influences. Finally, I should like to insist that an essential factor in Allen's method is the education of the patient, so that he can carry on his diet with intelligence when it is finally worked out.—I am, etc.,

London, W., June 17th. P. J. CAMMIDGE.

[1] *Lancet*, November 27th, 1915, p. 1187.

Universities and Colleges.

UNIVERSITY OF DUBLIN.

SCHOOL OF PHYSIC, TRINITY COLLEGE.

THE following candidates have been approved at the examinations indicated:

FINAL MEDICAL, PART I.—*Materia Medica, Pathology, Medical Jurisprudence and Hygiene:* *W. R. Fearon, *E. D'A. McCrea, *T. S. McDonald, J. A. W. Cullen, T. M. Bentley, C. G. Ambrose, E. F. Wilson, P. H. S. Smith, W. J. Hamilton, M. G. Jackson, T. Tabuteau, P. Casey, H. J. Wright, P. C. Parr, J. E. Hill, †F. W. P. Sullivan, †C. C. Mecredy, §Margaret Wolfe, ‡A. L. Gregg, ‡B. A. McSwiney, ‡D. S. Prentice.

PART II.—*Surgery (B.Ch.):* *T. P. Chapman, A. A. L. Albertyn, C. H. Comerford, J. A. C. Kidd, P. A. Hall, E. O. Marks, R. M. B. Gordon, A. H. Price, C. C. Mecredy, H. S. Collins, T. Stanton, Violet M. Deale, S. V. Furlong, R. W. Pritchard, C. O. J. Young, Marie A Hadden, E. Lipman, C. Weir, Esther V. Adderley, H. J. Wright. *Medicine (M.B.):* *C. H. Comerford, D. R. Hennessy, C. L. McDonogh, P. A. Hall, T. J. Lane, A. A. L. Albertyn, E. O. Marks, L. Blumberg, T. Stanton, T. G. Roche, C. Weir, C. O. J. Young, A. H. Price. *Midwifery (B.A.O.):* T. J. Lane, F. J. Murphy, J. C. Ogilvie, W. F. Wicht, A. A. L. Albertyn, J. P. Macnamara, A. H. Price, C. O. J. Young, E. O. Marks, R. W. Pritchard.

* High marks.
† Medical Jurisprudence and Hygiene completing examination.
§ Materia Medica and Pathology.
‡ Materia Medica, Medical Jurisprudence and Hygiene.

UNIVERSITY OF SHEFFIELD.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—F. Gamm, Lydia M. Henry, F. G. E. Hill, G. K. E. Inman, Florence Millard, R. H. Rae, W. Sharrard.

UNIVERSITY OF GLASGOW.

THE following degrees were conferred on July 19th:

M.B., CH.B.—*E. M'M. Dunlop, *D. Campbell, †A. F. M'Millan, †A. C. Hepburn, †G. C. Swanson, †K. J. T. Wilson, †S. J. Henderson, T. Blackwood, J. P. Broom, A. C. Brown, J. A. Buchanan, Winnifred J. Crawford, J. W. Dalglish, J. F. Duthie, J. Ewing, T. Gray, E. G. Hall-Sánchez, J. L. Hamilton, R. Isbister, O. Johnston, R. W. MacDonald, D. B. M'Intosh, J. W. Maclean, Mary A. MacL. MacLean, Margaret K. Mitchell, R. Rodger, Mary Scott, J. Steele, A. R. Steven, J. B. Steven.

* With honours. † With commendation.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE following have been admitted Fellows: I. W. Dickson, G. H. R. Hamilton, W. H. Thomas, H. R. Hodgkinson, W. J. Jenner, B. Mitra, C. W. Sharp.

CONJOINT BOARD IN SCOTLAND.

THE following candidates have been approved at the examination indicated:

FINAL EXAMINATION.—R. L. Jones, W. B. Lawson, M. Campbell, Keki Sorabji Bhiwandiwalla, Maniketh Vythi Menon, W. C. Berrie, J. A. Murray, J. A. Smith, J. Y. M'Lean, P. Hayes, J. Bygott.

LONDON SCHOOL OF TROPICAL MEDICINE.

THE following candidates have been approved at the examination held at the termination of the fifty-first session:

*†H. D. Cumming †K. T. Jungalwalla, J. B. Flamer-Caldera, S. C. Biswas, J. T. Watt, G. T. Makhijani, Miss I. N. Clough.

* Awarded Duncan and Lalcaca medals for highest aggregate of marks for the session and for highest marks for academic year respectively.

† With distinction.

SOCIETY OF APOTHECARIES OF LONDON.

THE diploma of the society has been granted to Messrs. G. A. Crowe, H. T. Lamb, and A. L. Malabre.

CORRECTION.—In the footnote to the list of degrees conferred at the University of Edinburgh published last week the symbols signifying "Gold medal for thesis" and that for "Highly commended for thesis" were accidentally transposed.

The Services.

EXCHANGES.

CAPTAIN R.A.M.C.(T.), Yeomanry regiment, desires exchange into field ambulance, base hospital or regiment at front or abroad.—Address No. 2899, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

M.O. small camp, healthy, pleasant country place, Egypt, wishes exchange hospital, England, vicinity London.—Particulars address No. 2900, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Obituary.

SIR VICTOR HORSLEY, C.B., F.R.S., M.B., F.R.C.S.,

CONSULTING SURGEON, UNIVERSITY COLLEGE HOSPITAL, AND THE NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, QUEEN SQUARE; COLONEL A.M.S.

(With Portrait on Special Plate.)

WE had with regret to announce last week the death of Sir Victor Horsley, at Amara, on the Tigris, where he was serving as consulting surgeon with the Mesopotamian Expeditionary Force. On the establishment of the Territorial general hospitals, he became a member of the surgical staff, "available on mobilization," of the 3rd London General Hospital, with the rank of captain. It was not quite his first experience of soldiering, as he had been as a student an ardent member of the Artists' Volunteers, in which he attained to non-commissioned rank. When the Territorial general hospitals were mobilized in August, 1914, he took an active part in the organization and equipment of the hospital to which he was then attached; in May, 1915, his desire for active service was gratified by his appointment to the charge of the surgical division of No. 21 General Hospital, with the temporary rank of major. This hospital embarked for Egypt in May, 1915, and he served with it at Alexandria. In July, 1915, he was appointed surgical consultant with the Mediterranean Expeditionary Force, with the rank and pay of Colonel A.M.S. He made use of the wide powers which that commission confers to report upon and remedy as far as possible any conditions which, in his judgement, affected the welfare of the sick and wounded. In the course of the discharge of these duties he visited all the beaches of Gallipoli and the island of Mudros. During the Senussi rising he was called to Messa Matruh, and was constantly employed in heavy consulting work for the army in Alexandria and the neighbourhood, until, on the conclusion of the Gallipoli campaign, a general redistribution of the medical appointments in Egypt became advisable. Hearing from an officer who had returned from Mesopotamia of the difficulties and needs of our medical service on the Tigris, he immediately volunteered, and proceeded to Mesopotamia in March, 1916. There he continued doing very admirable work against the burden of defective transport, involving shortness of food and all supplies, under climatic conditions of the most trying kind. In a letter, written as recently as June 7th from Amara, he said: "When I was going through the cholera camps I discovered that the Indian Field Ambulances had no anticholera outfits (Leonard Rogers's infusion apparatus, etc.). . . . I found a medical officer infusing a patient by pouring the saline into the patient's vein out of his (the M.O.'s) own teapot. . . . All due to financial terrorism in times of peace." He seems to have been taken ill at Amara on the afternoon of July 15th. He was admitted to hospital with a temperature of 104°, which fell slightly under treatment. An examination of the blood for malaria gave a negative result, as did culture tests for the enteric group of organisms. In the course of the following day (at 11 a.m.) the temperature rose to 108°, and he became unconscious; he never regained consciousness, and died at 8.30 p.m. on July 16th. His death, it would seem, was due to heat-stroke.

Victor Alexander Haden Horsley was born in 1857. He was the son of John Callcott Horsley, R.A., and grandson of William Horsley the composer. He was grand-nephew of Sir Augustus Callcott, R.A., the landscape painter. His mother's branch of the family had contributed members to the medical profession for several generations. His maternal uncle, Sir Seymour Haden, was not only a successful medical man but attained distinction as an etcher and as the inventor of a new process of etching.

Horsley was educated at Cranbrook School and University College and Hospital. During the period of his studentship he was deeply impressed by the teachings of Mr. Marcus Beck and Professor Burdon-Sanderson; indeed, he attended the latter's lectures on physiology for three successive sessions. It was during this period that Lister came to London, and Horsley took up the study of Lister's methods with great enthusiasm.

He graduated M.B., B.S.Lond. in 1881, being Scholar in Surgery and Gold Medallist, and took the F.R.C.S.Eng. in 1883. In 1885 he was appointed to the surgical staff of University College Hospital, and in 1887 became professor of pathology in the college. He retained the chair until 1896. He was appointed professor of clinical surgery in 1899.

From 1884 to 1890 he was Professor Superintendent of the Brown Institution, where he carried out investigations into the localization of function of the brain and of the thyroid gland, which latter afforded the proof that myxoedema was caused by the loss of this organ. In 1885 he was appointed secretary to the Royal Commission on Hydrophobia, and conducted researches into hydrophobia and Pasteur's treatment for it. In 1886 he was elected Fellow of the Royal Society. In the same year he was appointed surgeon to the National Hospital for the Paralysed and Epileptic, Queen Square, and there performed his first operation on a tumour of the brain, which he successfully removed. In 1890 he suggested the use of the thyroid gland in the treatment of myxoedema, the method proposed being that of grafting the gland into the bodies of patients suffering from the disease. In 1891 he contributed a critical and historical review of the subject to Virchow's *Festschrift*.

In the same year he gave with Professor Gotch the Croonian Lecture of the Royal Society on an electrical method of determining the functions of the mammalian nervous system and their localization. From 1891 to 1893 he was Fullerian Professor at the Royal Institution.

In 1893 he was awarded the Cameron Prize for therapeutics by the University of Edinburgh, and at the request of the Senate delivered an address on his work during the previous ten years on brain surgery and the thyroid gland. At the fourth annual meeting of the German Society of Neurologists in Berlin in October, 1910, he gave an address on the Surgical *versus* the Expectant Treatment of Intracranial Tumour.

In 1894 he was awarded the Royal Medal of the Royal Society, and in 1896 the Fothergillian Medal of the Medical Society for his papers on the functions of the thyroid gland and its applications to treatment.

Throughout all these years he was constantly engaged in research, mainly on the nervous system, and in the publication of papers alone or in conjunction with others. This work only ceased when he gave up his laboratory at University College in 1913.

He received the honour of knighthood in 1902, and the C.B. in connexion with his services with the Mediterranean Expeditionary Force. The recognition of his eminence by foreign men of science was shown by the many honorary degrees and diplomas from European and American learned societies and universities.

His relations with our ally France were always of the friendliest character; he was a foreign Associate of the Académie de Médecine, and was chosen by an international committee to be the first recipient of the Lannelongue Prize for originating the greatest advance in surgery during the preceding years. He was deputed to represent France at the funeral of Lord Lister.

Sir Victor Horsley married in 1887 the daughter of Sir Frederick Bramwell, by whom and by two sons and a daughter he is survived. Both sons received commissions from the Artists to the Gordon Highlanders in an early part of the war.

SURGICAL WORK.

Mr. WILFRED TROTTER, Surgeon to University College Hospital, has been good enough to contribute the following estimate of Sir Victor Horsley as a surgeon:

It was Horsley's surgical work which first impressed his personality upon the notice of the world; it is to his surgical work that we must still turn to find the most characteristic illustration of the richness and amplitude of his powers.

In the early years of the last quarter of the nineteenth century the physiology of the central nervous system had begun to yield substantial successes to the method of experimental study. Among the group of remarkable men to whom this rapid extension of knowledge was due it fortunately happened that there was one who, while his qualities as a scientific investigator were of the first rank, was also, by inclination, by natural aptitude, and by training, a practical surgeon of altogether exceptional capacity. It was this happy combination of interests and

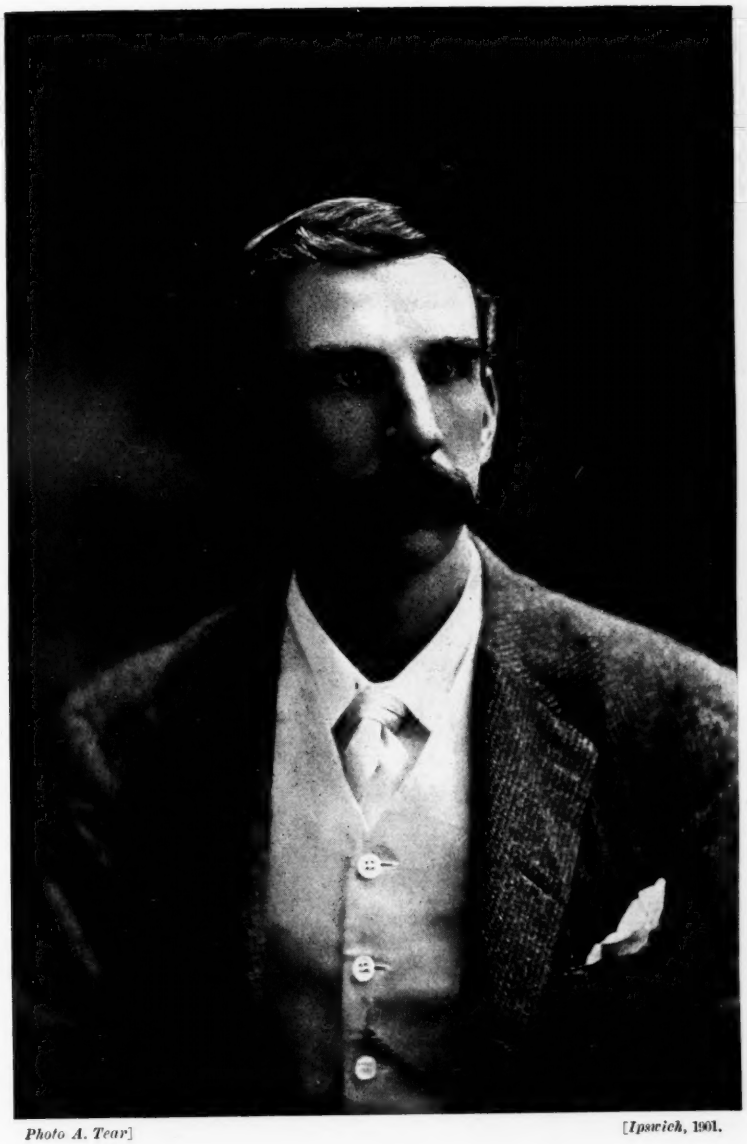

Photo A. Tear] [*Ipswich*, 1901.

SIR VICTOR HORSLEY, C.B., F.R.S.,

COLONEL A.M.S.

endowments that enabled Horsley to enlarge the scope of surgical neurology so quickly, and yet with such stability, as to give him at once a European reputation and, while he was yet a young man, a position of classical authority.

In the Eighties he was able to demonstrate the curability by surgical means of tumours within the spinal canal and within the skull. These successes were the result of precise scientific diagnosis and a fully developed surgical technique, which has been the basis of all later developments in the same field. In recalling the first successful laminectomy for tumour—the case published in conjunction with Gowers in 1887—it is interesting to remember that throughout his work the operation of laminectomy was perhaps that which of all others displayed his powers as an operator at their best. In no surgical procedure were his almost magical ease and precision more characteristically shown.

The conception with which he began his career—that experimental research is a necessary condition for the progressive study of surgery—remained with him always, and he was steadfastly loyal to it in spite of all the demands of his other activities. It is not intended here to discuss the value of, or even to enumerate, the great series of studies he contributed to experimental physiology and pathology. It is desired rather to lay emphasis upon the fact that the mind by which they were planned and carried out was endowed also with exceptional clinical insight and a thorough knowledge of the needs and limitations of practical surgery.

In his unique clinical work in the field of neurology his minute familiarity with the experimental physiology of the nervous system, reacting upon and illuminated by his unequalled experience of pathological states, gave to his conclusions their peculiar and universally-recognized value. His contributions to the surgery of cerebral tumour, of head injuries, of spinal injuries and diseases are all of them characteristic examples of his method.

He very early concerned himself with the development of the surgery of the thyroid; here again in close and fruitful association with experimental studies in which he was an early and successful pioneer. It was inevitable that he should concern himself with that most difficult and still, to a great extent, unsolved problem, the treatment of trigeminal neuralgia. No less than twenty-five years ago he proposed and carried out the intradural division of the nerve, an extremely formidable operation which he occasionally practised in after-years with success, when removal of the ganglion had failed to give relief. When the Hartley-Krause operation was introduced, his operative dexterity enabled him to practise it with unequalled success and to give it a currency it could scarcely have attained without his encouragement.

Horsley's eminence in a special field has perhaps tended to obscure the fact that his interest in general surgery underwent no diminution. Specialism with him was an addition to the general equipment of the surgeon and led to no narrowing of his sympathies or restriction of his mental field. Upon those who were brought into contact with him in professional matters the effect of his breadth of outlook was healthy and profound. His influence was always cast in favour of a courageous optimism and a recognition of broad principles (as more important than multitudinous details of technique) and a confident expectation of progress in the science and art of surgery. He was extraordinarily free from the slightest affectation of superiority or the reserve which his great position and prestige might possibly have justified. From his house-surgeons and students his easy simplicity, his charming sense of fun, his assumption of complete equality, won a devotion that was too deep to be disturbed by the passing agitations of the operating theatre.

In dealing with his patients Horsley consistently showed a deep and tender humanity very much at variance with the picture of him which it is to be supposed the public allowed itself sometimes to draw. He had a horror of inflicting pain, and would never undertake any procedure, however insignificant, that might be painful without insisting upon an anaesthetic. Again, he was extraordinarily ingenious and patient in devising means for minimizing discomfort after operations, during dressings, and in the course of convalescence. No one could be associated with him in work for long without learning how essential a trait in his character this mercifulness was. The operative skill of eminent surgeons is sometimes perhaps a little legendary. There was no such element in Horsley's reputation. He had dexterity, gentleness, precision; he could be inexhaustibly patient in extirpating a Gasserian ganglion and almost incredibly quick in exposing a spinal cord. He would take any risk that he was satisfied was necessary, he would take none that he could avoid. And his operations were apt to look very easy.

There can be no doubt he was one of the greatest operators of his generation.

Personal Characteristics.

A personal friend writes:

He was both a collectivist and an individualist, believing in collective rule by individual vote. In all his strivings with the Council of the College of Surgeons on behalf of the Members, with the opposers of an extended franchise, with those who refused to trained nurses the right of State registration, with those who denied to women the degrees to which their examinations entitled them, or against our present diplomatic system which places the lives and fortunes of the many at the absolute disposal of the few, he was governed by the one principle of justice to the individual, whatever his or her position in the social scale.

On the same ground, therefore, he was an advocate for radical reforms in our system of education, for universal teaching of scientific method and for the extension to each individual of the opportunities for training and for knowledge, that each and all should be able competently to fulfil their duties to themselves and to the State.

He occupied so prominent a place in regard to controversies of many and widely different kinds, that perhaps no man was more generally discussed and criticized than he by different groups of men, but those who only knew him from the controversial side on public questions and thought of him and described him as a fighter, failed entirely to appreciate his real personality. This could only be gauged by those who lived and worked with him, either in his laboratory, his practice, or his home, and thus came under the influence of a wonderfully bright and optimistic temperament, and a mind stored with knowledge to which quite inexhaustible industry added day by day. Outside his scientific reading, he read besides with extreme rapidity and extraordinary memory, all sorts of books and pamphlets on housing, education, land reform, history, biography, travels, archaeology (which was a passion) and antiquarian records. Everything was of interest, old world phraseology and quaint expression having a special fascination for him. With a mind so fed, with his vividness of thought, his visualizing power and the energy which took delight in expression, his society had a charm entirely its own.

He wrote scientific papers, scathing polemics, addresses to Brotherhoods (whose work he welcomed and helped as one of the greatest revivifying forces of the times), all in the drawing-room of his house, not disturbed, but helped and pleased with the talk or the music of young people round him, whose companionship was as necessary to his inner life as sunshine and air. No sketch of Victor Horsley, however slight, which fails to give these aspects of his many-sided personality can ever present even a shadow of himself, and it is only the realization that his soul was full not alone of indignation and scorn for evil and evil-doing, but far more of affections, generous sympathies, and ardent love for beauty, righteousness, and truth, which gives the true key to his work and his battles that these great things might be the possession and the rule of life for all the world.

His uncompromising attitude towards the use of alcohol is well known, and brought on him the charge of fanaticism and prejudice. But his prejudice (in the strict sense of the word) lay rather in the opposite direction, being himself, in his early days, accustomed to the use of alcohol in a very moderate degree. It was only on the discovery that it hampered, instead of aiding, his reading for an examination that he perceived the possible full significance of the alcohol question in the national life. From thenceforth he never ceased his study of the subject in all its aspects, scientific and social, nor desisted from persuasion against its use.

It was as a part of his life-work on this great subject that he accepted the suggestion of Dr. Mary Sturge to prepare in collaboration with her a book of scientific evidence on the question, to be placed at the service of all

interested in the well-being of the nation. Much of the material was furnished and written by him, and even during his work in Egypt he was continually collecting further evidence which should be added when again a fresh edition of the book should become necessary.

The war, with all that it revealed, only served to confirm his convictions, and his last letters were filled with almost despairing regrets for the national habits which, in his belief, in council and in action were paralysing the national work.

PUBLIC WORK.

In 1897 he gave evidence of his growing interest in medico-political work by becoming a member of the General Medical Council, on which he sat as a direct representative of the profession for two terms (to 1907).

Sir Victor (then Mr. Victor) Horsley was elected president of the Medical Defence Union in 1891. His election was consequent upon certain troubles into which the union had fallen through the action of "Denholm *v.* Tait," and it was considered necessary, in the interests of the union, that the vacancy should be created. His direction and leadership gave a great impetus to the work of medical defence in all its branches. He, as with all other work he did, never spared himself, and no time was too great to give in the interests of any member who was assailed and required defence. His presidentship was most successful, and he steered the union through many difficulties which its very success had made for it. He attended every meeting, and in addition gave many valuable hours to the work when necessary, often working until the late hours of the night in its interest. He remained president until 1897, his resignation being then necessary owing to his election as one of the direct representatives on the General Medical Council. The union undoubtedly owed to Sir Victor Horsley a deep debt of gratitude for his strenuous support at a time of great difficulty, and his six years of office will ever be remembered by his late colleagues as having contributed greatly to the success to which the union has attained.

Work for the British Medical Association.

Dr. ALFRED COX, Medical Secretary of the British Medical Association, writes:

Sir Victor Horsley took extraordinary interest in the work of the British Medical Association, and left a deep mark on its history and constitution. For the last twenty-five years the Association was one of the main interests of a man who was intensely interested in many things; and though he was probably one of the busiest men in London, he could always find time for Association work.

More than any other man he made the demand for the reconstitution of the Association on democratic lines, for he was the chief inspiration as well as the leader of those who called together the Manchester Conference in 1900, and afterwards approached the Council of the Association at Ipswich with the proposals which led it to set up the Constitution Committee. Those who like myself were members of that committee will unhesitatingly concede that Horsley and Mr. Smith Whitaker were the two outstanding figures in that committee, and very largely influenced the nature of its report which was adopted at Cheltenham in 1901.

It was natural that Horsley should become the first Chairman of Representative Meetings. He held office from 1903 to 1906, and I believe he was as proud of that office and all that it meant in providing opportunities for moulding the organization of the profession as of any honour that was ever conferred on him, for he had a great idea of the dignity and importance of the Association, and of the great responsibility of its chief executive officers. He continued to be a member of the Representative Meeting until 1912, and was as able and helpful as a member as he had been as Chairman. The mark that Horsley made on both the constitution of the Association and the character of the Representative Meeting is indelible.

He filled nearly every post in the Association except that of President and Chairman of Council. He was a member of Council from 1900 to 1912, and was chairman of many committees. His chief Association work was done in connexion with the Organization Committee, where he took a very active and prominent part in drafting the Articles and By-laws, and in the application for a Royal Charter, and on the Medico-Political Committee. On the latter he took the leading part in forming the policy of the Association in regard to reform of Coroners' Law and Death Registration, Medical Inspection and Treatment of School Children, Amendment of Medical Acts, the constitution of a Ministry of Public Health, State Registration of Nurses, and suppression of unqualified practice and quack advertisements.

He did not take any specially prominent part as a member of the Association in the Insurance Act fight. He was not a member of the State Sickness Insurance Committee which formulated the policy that was submitted to and adopted by the profession. He took his usual active part in the discussions in Council and Representative Meeting, but it was a profound disappointment to him when he found that his honest difference of opinion on this subject from many members of the profession was regarded by some as a betrayal of the interests of those for whom he had been fighting nearly all his professional life. For a time he retired from active participation in the work of the Association, though he always remained a member of the Medical Inspection of School Children Subcommittee, and as soon as he was asked to help in connexion with some of the subjects he had made peculiarly his own he accepted without hesitation. He was too big a man to think it necessary to defend himself against a charge which he, and those who knew him best, felt to be absurd, but though he was the last man to keep his heart on his sleeve, the defection of many of his old supporters was a great blow to him. Just after he had relinquished his candidature at Market Harborough, because he was too independent for ordinary party purposes, he remarked to me in a quizzical way that such a wilful throwing away of a safe seat must have seemed strange to people who professed to believe that he had betrayed his profession for party purposes.

Many of his staunchest friends and admirers were uneasy to find that he grew less tolerant as he grew older, and less inclined to allow that people who disagreed with him might be right and might be perfectly sincere. But this was a small price to pay for the devoted services of a man who always put his profession first, and was not content with academic expressions of regard for it, but worked hard for it all his life.

No note of Horsley's work for the British Medical Association would be complete without mention of the part taken by Lady Horsley. In everything he did she co-operated with a zeal and a knowledge which explained, to those who knew of it, the enormous amount of work he was capable of getting through.

It will help some readers to realize the kind of man he was to recall his action in regard to a presentation the Representatives proposed to make to him when he left the chair. A considerable sum of money was collected by Dr. W. Douglas and a handsome piece of plate bought before Horsley heard of it. He at once informed Dr. Douglas that he would rather the presentation were not made, much as he valued the feeling that inspired it. His reasons were very characteristic. First, he said, he had already been thanked very generously for his work in the chair, and secondly, he had all his life held the view that personal presentations should not be made for public service, except by the State. He went on to say, "Work, whether political or scientific, if done in the interests of the profession, brings with it not only the ample satisfaction of having contributed to social progress, but also earns constantly recurring grateful acknowledgement from those who happen to more directly benefit by what has been attained."

His death means to me and many other men of about my age the loss of a unique and irreplaceable personality in medical politics. Workers in this field are not too common, and to secure the co-operation of a man of his scientific position and great personality meant more to the ardent spirits of the Nineties than I can express. He, a consultant of the consultants, was able to understand and sympathize with the difficulties of the general practitioner in a way that was all the more effective because taken from a detached point of view, and his labours on the Contract Practice Subcommittee left him with a deep conviction of the need to improve the economic position of the general practitioner, particularly in the poorer districts. It has been one of the great privileges of my life to know him well and work with him, and I have never known any man who so thoroughly realized and tried to put into practice Bacon's saying, "Every man is a debtor to his

profession." His last letter to me was dated May 15th, and was addressed from somewhere "300 miles up the Tigris on a burning mud flat in the midst of cholera, dysentery, diarrhoea, etc., etc." The letter was full of anxious inquiries as to what was happening about nurses' registration and what the British Medical Association was doing. He ends by saying how impatient he felt at being unable to help. Peace to his ardent spirit! Few men ever gave of themselves more freely or more unselfishly, and his death at the post of duty and danger seems to me to be a fitting end to a strenuous life devoted to the service of his fellows, and particularly to the profession of which he was such a brilliant ornament.

Dr. T. JENNER VERRALL, who was associated with Sir Victor Horsley in the institution of the new constitution and its working afterwards, adds the following personal tribute:

I have no doubt that the obituary notice of Sir Victor Horsley will give a full and just account of his manifold activities on behalf of the profession, and especially of his devotion to the interests of the Association. Will you let me add a few words of admiration and regret? The world knows his scientific work and the surgical successes which were built on that foundation. The Association generally will recall with gratitude that in the very midst of his busiest life he found willingly the time for medical politics. As I was the Chairman of Representative Meetings at a time of great stress and difficulty, I know well how greatly the profession is indebted to him for the constitutional machinery, the necessity for which he was one of the first to see, and for the construction of which he was so greatly responsible. Those who have been privileged to share his work in the British Medical Association will have recognized and admired his clear judgement in selecting the principles to be maintained and his stern adherence to the smallest details which he thought necessary to such maintenance. It is certainly possible (and I believe it to be true) that readiness for compromise on occasion and a larger realization of the part which sentiment takes in moulding the affairs of men would have helped him in his great and unselfish efforts for the general good, but steadfast vision of the goal and determination that nothing shall shake the will nor turn the course are gifts sufficiently rare that we can well be grateful for all they enabled Horsley to achieve. His was a great soul devoted to worthy ends.

SOME PERSONAL APPRECIATIONS.

Sir WILLIAM OSLER writes:

Better than any man of his generation Victor Horsley upheld a great British tradition, for he combined the experimental physiologist and the practical surgeon in a degree unequalled since John Hunter. In his deft hands experiment reached a perfection not before known in the laboratory. To have recharted (with his friends Beevor, Schäfer, Mott, Gotch, and Semon) the cerebral cortex was a brilliant achievement. A technique of such perfection was reached that the surgery of the laboratory was a decade ahead of the clinic. There was a mind, too, behind the hands—resolute, keen, and fertile in suggestion. He had the true scientific spirit, open and free, without secrets or seclusion, and a fraternal kindliness that often gave to others the lion's share of credit. What a pity that twenty-five years ago the fragmented medical organization of London had no abiding home in the shape of a great physiological institute for a man of Horsley's genius!

He took over to a hospital career qualities which enabled him to give us within a few years three of the greatest sensations of our time. His paper on Brain Surgery at the Brighton meeting (1886) of the Association electrified the profession, and with Macewen's contemporaneous work put British surgery in the van in this field. Less dramatic, but perhaps more profound, was the impression made in the following year by the successful removal of a tumour of the spinal cord. It was truly an epoch-making case, and one is at a loss which to admire more—the brilliant diagnosis of Gowers or the matchless technique of Horsley. In this great war scores of lives have been saved by the application of his surgical lessons. A direct result of his experimental work on the thyroid gland was the successful treatment of myxoedema, which for the first time placed organo-therapy on a scientific basis. Year by year an increasing output of researches gave him a unique position in the surgical world. In spite of the incessant demands of practice he managed to keep in daily touch with laboratory work, and was rarely without a special research student. From personal experience I know how freely his time was at the disposal of the innumerable visitors who sought his clinics.

What demon drove a man of this type into the muddy pool of politics? A born reformer, he could not resist. Fearless, dogmatic, and assertive, once in a contest no manna-dropping words came from his tongue. A hard hitter, and always with a fanatical conviction of the justice of his cause, what wonder that the world's coarse thumb and finger could not always plumb the sincerity of his motives! Let us, as dear old Fuller says of Caius, "leave the heat of his faith to God's sole judgement, and the light of his good works to men's imitation."

One summer evening in 1878, at the house of my much-loved friend Daniel Hack Tuke, I met two young students (of University College) whose bright eyes held the light of high promise. One, Willie Tuke, was cut down at the outset of a brilliant career. The upward path of the other I followed from afar with an affectionate interest, and it was with no small measure of gratification that I saw Victor Horsley become the greatest Hunterian surgeon of his day.

Sir R. HAVELOCK CHARLES, G.C.V.O., Sergeant-Surgeon to the King, formerly Professor of Surgery, Calcutta, has written the following appreciation from the point of view of a surgeon whose practice for many years lay at the other side of the world:

Sir Victor Horsley is dead. He died helping his country, and his departure is a loss to the British school of surgery. It is many years since I first met him at University College Hospital. With pleasure I recall his kindness. At that time I was working at certain points in brain surgery, and had seen the skill of many in foreign schools. Horsley was a master in his craft, combining true science and practice. He was a personality, helpful to the student and encouraging ever to any one engaged on post-graduate study. He was a man of ideas himself, and he had the power of raising them in others. After an hour with him I used to come away with food for reflection and thoughts engendered by his talk. Such a man is a great asset to any school of medicine.

Returning from India it was a habit of mine to vary my route of travel to England. In this way I was able at various times to visit the chief medical centres in the world in order to see how others did things. This is not a bad plan for any man engaged on work in far away countries, and absolutely dependent on himself for all the exigencies of surgery. It is one thing reading what another man writes; it is much better to see that man carry out what he has been writing about. The surgeon pilgrim gains confidence, and finds that it is good to meet the great men of the profession in various countries and schools, and study their personalities. This widens the mind and enables one to try and grasp what is best in all. The seeker should endeavour to find the good, and not be simply a travelling critic. Often by observing I have learnt how *not* to do a thing, but never with Victor Horsley. He was a man, a scientist, a surgeon, and a helper to anyone desiring a knowledge of the studies he had made peculiarly his own. I learnt from him directly and indirectly, and appreciated his sterling merit.

It was unwise for a man of his age, who had had no experience of tropical heat, usages, or habits, to have gone to work in the confines of the Persian Gulf. He should not have been there. His life has been thrown away. That is the sadness of his death.

Sir Victor Horsley was a man not afraid of expressing his opinions, and he had the courage of these. In medical politics, I believe, he had his friends and enemies. A man of strong convictions must ever have them. However, my relations with him never had anything to do with that side of his life, though, at the same time, I must say it is a pleasure in this world to meet one *not* of the milk and water kind—and that man was Victor Horsley. Doubtless he had his faults—but I now forget them, and only call to mind what has been written:

> They say the best men are moulded out of faults;
> And, for the most, become much more the better
> For being a little bad.

Dr. CHARLES BOLTON, Physician to the Hospital, and late Director of Pathological Studies and Research, and Lecturer on General Pathology, University College Hospital Medical School, writes:

In addition to the distinction which Sir Victor Horsley conferred upon the college and hospital by his scientific attainments, his influence upon them was profound both from the educational and research points of view, but more particularly the latter. Horsley was not only pre-eminent as a surgeon but had also the genius for experimental research. He had the rare gift of imagination developed to a high degree, and backed by a wonderful skill in carrying out the experiments involved in the solution of the problems he had set himself to solve. When he was appointed to the chair of pathology at University College experimental pathology was practically non-existent in Great Britain, and as a fact it can be truthfully stated that it is still at a very low ebb. Under Horsley's direction the pathological department at University College became a definite and well known centre for research in experimental pathology, which attracted workers from all over the world, and was one of the foremost in nervous pathology. An experimental atmosphere was established and a high standard of research set, and there is no doubt that this condition influenced the authorities, when the new medical school was established some years after Horsley ceased to be professor, to devote a part of the building to thoroughly equipped laboratories for the special study of experimental pathology. A great quantity of first-class work was turned out annually from Horsley's laboratory, because he was ever ready not only to give his ideas to those working under him, but also to assist them in carrying out their work, and to see that their experiments were properly conducted and that correct deductions were drawn from them. A man of great personality and energy, he imparted his enthusiasm to his workers, and his influence extended much wider than the limits of University College, because many of his research workers hold or have held prominent positions as pathologists elsewhere. A man with Horsley's breadth of mind could not fail to be interested in the other branches of pathology, in which he reorganized courses of instruction, but bacteriology in the College did not develop to any great extent until after his time. Horsley's lectures in general pathology were most interesting. He did not teach from the examination point of view in the very least, but his aim was to give an account of the processes of disease as ascertained by experimental inquiry, and he illustrated all his statements of fact by experiments on every possible occasion. He would take the greatest trouble in the preparation of class experiments, many of them often of great complexity; no one with less genius for experimental work than Horsley could have succeeded in performing these experiments so evidently proving what he intended to a class of students. In this way Horsley fired the enthusiasm of his students for the experimental method, and taught them to believe theories which were founded upon facts only. Horsley was not fond of clinical teaching, and, in fact, his time was so fully occupied with a large consulting practice and many interests outside the hospital altogether that his visits were short and irregular, and he retired from the hospital staff some years before his death. He was, however, an able clinical teacher, and his wards usually contained an excellent selection of brain and spinal cord cases, on which he would lecture with great lucidity and interest. Horsley's operations on the nervous system attracted a large audience not only of university students but also of foreign post-graduates and surgeons.

Major R. MCCARRISON, I.M.S., writes:

During Sir Victor Horsley's period of service with the Mediterranean Expeditionary Force circumstances threw me into very intimate association with him. I count it one of the highest privileges of my life to have enjoyed his friendship and to have been admitted into the perfectly harmonious circle of his private life.

He was a man whose professional skill, whose diversity of knowledge, whose depth of patriotism, whose greatness of soul, whose sincerity of purpose, whose religion of truth, and withal whose simplicity of character endeared him to all who knew him intimately. Ever ready to place his masterly knowledge of medical science, and especially of brain surgery, at the service of the soldier, he subordinated every consideration of personal comfort to this end. He visited the furthest outposts of our fighting front at Gallipoli—Mudros, Anzac, Suvla—returning to Alexandria brimful of eager enthusiasm in the cause of the sick and wounded. He visited the western frontier of Egypt during the height of our operations against the Sennoussi, conveying to each dressing-station the fundamental truths of brain surgery which his genius had evolved, and the knowledge of which has resulted in the saving of so many lives. He was an apostle of scientific truth, and he did not fear to carry his gospel into the most far-flung of our battle lines.

How he came to volunteer for Mesopotamia is characteristic of him. He had come through a period of intense family anxiety when he met at dinner one evening in February a man who related stories of the horrors of the Tigris campaign and of the sufferings of our sick and wounded there. The cause of the weak and suffering was ever the clarion call for him who was above all things the knight of distress. So he volunteered without consulting his friends or relatives, and announced his departure in a few days for Mesopotamia as though he were undertaking a week end trip to Cairo. His letters to me from the Tigris front have always been filled with high-souled enthusiasm, with plans for the mitigation of the sufferings of the sick and wounded, but with never a word of his own discomforts. Who amongst us will grudge to the tortured thousands of this expedition the comfort of his presence? He was for them the cup of cold water in the sweltering hell of their suffering.

His accessibility was one of his most lovable traits, and for man or beast he was ever ready to exert his skill to the utmost. I remember my surprise when he told me that one of his patients in Alexandria was a Persian cat which he visited twice a day. Like all great experimenters who are compelled to use animals for the furtherance of scientific medicine, he loved them deeply; cruelty was as foreign to his nature as was dishonesty.

A great Englishman has given his life for his country and for his fellows. His friends and his opponents alike will voice the sentiment when I say:

> He was a gentleman in whom
> I built an absolute trust.

Sir THOMAS BARLOW writes:

His great scientific and surgical achievements speak for themselves, and his courage and fearlessness are fully recognized, but his personal example of absolute fidelity to principle, of readiness to accept obloquy even, for the sake of what he thought right, is not, and probably will not be realized, except by those who knew him and worked with him. His death means the loss of an unfailing stimulus and inspiration which nothing can replace but which I hope none of us will forget.

Dr. T. A. Ross (Ventnor) writes:

Singleness of purpose and unflagging energy in its pursuit were the dominating features in Sir Victor's public life. Whether or not a thing should be done depended on one thing only: Was it right that it should be done? never Was it expedient? If it ought to be done he did it with all his power and all his strength. There was no compromise with the accursed thing, none of the negotiating said to be dear to the English mind, nothing of the huckster spirit which makes the successful politician. He would roll no man's log in the immoral hope that his own would be rolled when the time came; and this was a thing that the politicians—ordinary or medical—could not understand. Never did he think of his career or what would happen to him when he took up a cause—the cause alone was what mattered. How many there were—the right to research, temperance, woman's suffrage, the bettering of the conditions of the people, the raising of education. In none was popularity sought, and a cause that was not prospering was championed even more eagerly than one that was going to win. *Victrix causa placuit deis, sed victa Catoni.* In private life his friends will not easily forget another side of the man. The smile of welcome was of a rare quality. The brilliant wit, the deep sympathy in trouble, the vast stores of knowledge on all sorts of subjects were at the disposal of those whom he admitted to his circle. His generosity and hospitality were unbounded. As one privileged to drop in at almost any time, I used to wonder whether the Horsleys

ever lunched or dined alone—there was always some one there. Surrounded by experts in subjects other than his own, he could talk to them all in their own language. To have the chance of visiting some old church or castle in his company was an education—and it mattered not in what part of England it was, that England that he loved so well and for which he has laid down his life. Of his scientific work others are more fit to speak. I knew the man; his work was largely beyond me.

OLD MEMBER B.M.A. writes:

It is over twenty-one years ago when, as a member of a committee appointed by the Medical Defence Union to try and find terms on which amalgamation could be arranged with the London and Counties Medical Protection Society, I first had the privilege of meeting Sir Victor, then president of the union. His ability impressed me, as well as the unsparing use he gave of his time to the object for which the committee was chosen. Later, when on the council of the Metropolitan Counties Branch of the British Medical Association, I again admired Sir Victor's precision, accuracy, and ability in debate. In the intervening years, chiefly by his influence, the constitution of our Association had been altered, so that in the decisions of the Representative Body we had the considered opinion of the members. But it is not only as the man of commanding genius and courage I remember him, but also as the one who gave graciously and willingly of his skill and time to operate upon and cure my wife when ill and in danger of death.

THOMAS JAMES WALKER, M.D., F.R.C.S., J.P.,

CONSULTING SURGEON, PETERBOROUGH INFIRMARY.

By the death of Dr. T. J. Walker, which occurred on July 19th, the medical profession has lost a distinguished member and Peterborough one of its most respected citizens. He was the son of Dr. Thomas Walker, a native of Dumfriesshire, belonging to a family which could trace descent from John Knox. The younger Walker was born at Peterborough on August 18th, 1835; he was therefore within a month of completing his 81st year. He received his preliminary education at King's School, Peterborough, and entered the University of Edinburgh as a student of medicine in 1853. After a brilliant academic career he graduated M.B.Lond. in 1857 with honours, proceeding to the M.D. degree in 1861. He was admitted M.R.C.S. in 1857, and became F.R.C.S. by election in 1908. In 1858 he was appointed resident medical tutor and demonstrator of anatomy at Queen's College, Birmingham, and assistant physician and pathologist to Queen's Hospital. In 1860 he resigned these offices, and after spending six months in further study at Vienna joined his father in practice in his native city, where he spent the rest of his life. He soon gained a leading position as consulting surgeon in the Midlands. He was appointed surgeon to the Peterborough Infirmary in 1862, and continued on the active staff till the beginning of 1906, when he resigned and was elected consulting surgeon and a vice-president. He did much for the development of the infirmary not only by his activity in promoting reforms and collecting funds and his generosity as a benefactor, but by the high place in public confidence which he won for it through his professional skill.

Dr. Walker's reputation was far more than merely local. He was a pioneer of laryngology in this country, and the first surgeon in Great Britain who removed a growth of the larynx *per vias naturales*. The case was reported in the *Lancet* of November 9th, 1861. In 1863 he contributed to the BRITISH MEDICAL JOURNAL a series of papers on the laryngoscope and its clinical application. He was the author of articles on diseases of the larynx and trachea in *Quain's Dictionary of Medicine* (1882). In conjunction with Sir Felix Semon and Dr. de Havilland Hall he was Secretary to the Subsection of Diseases of the Throat at the International Medical Congress held in London in 1881. He was a Vice-President of the Laryngological Society of London. Among his contributions to medical literature are papers on the treatment of syphilis by hypodermic injection of salts of mercury, and on the treatment of angular curvature of the spine by a plaster jacket applied in the recumbent posture, which also appeared in this JOURNAL (1869 and 1879); on the significance of colourless stools without jaundice, and their connexion with disease of the pancreas, published in vol. lxxii of the *Transactions* of the Royal Medical and Chirurgical Society (1889); on acute ascending paralysis in cases of chronic cystitis, published in the *Transactions* of the Clinical Society of London (1905), and a description of a simple method of estimating the amount of sugar in glycosuric urine, published in the *Lancet* (1909). He was one of the earliest among provincial surgeons to perform ovariotomy, and in 1894 he did his first gastro-enterostomy.

In the midst of his numerous professional engagements Dr. Walker found time for much public work. He joined the Rifle Volunteer Corps in 1860 and served in it for thirty-six years, rising in that period from private to lieutenant-colonel; his patriotic work was recognized by the award of the Volunteer Decoration.

In 1875 he was made a Justice of the Peace for the Liberty of Peterborough. Dr. Walker, in his earlier days, was a thoroughgoing Whig, but when the great disruption came he threw in his lot with the Liberal Unionists, and at the time of his death was president of the Unionist Association, of which he had for many years been the chief energizing force. Though interested in municipal politics, he declined, owing to pressure of professional work, many invitations to become a member of the Town Council; for the same reason he felt unable to accept the honour of the mayoralty, which was more than once offered to him. He took the chief part in the establishment of the Public Library of Peterborough, and was a member of its committee from the first. On his eightieth birthday, August 18th, 1915, the freedom of the city was conferred upon him "in recognition of his long and distinguished service to his native city." He was the second honorary freeman of Peterborough, the first to receive that distinction having been Mr. Andrew Carnegie. Another tribute to the "dear old doctor," as he was often called, was the presentation made on December 22nd, 1915, of his portrait in oils, painted by Mr. Fiddes-Watt, A.R.S.A.; the fact that there were seven hundred subscribers bears eloquent witness to Dr. Walker's popularity among his fellow citizens.

Dr. Walker gave much time to historical and archaeological research. He was the author of a book entitled *The Dépôt for French Prisoners at Norman Cross, 1796–1816*, which was published in 1913 and reviewed in the BRITISH MEDICAL JOURNAL of April 11th, 1914. A second edition was quickly called for, and the work is recognized as the standard authority on a little known subject. Dr. Walker was an acknowledged authority on the Roman, Saxon, and later occupants of Peterborough. His collections of remains found there and of Roman relics found at Castor and elsewhere are very valuable. He became a member of the Peterborough Natural History and Archaeological Society in 1880 and was a vice-president from 1894 to 1911. He was president in 1892–93 and again in 1911. In 1912 he became a patron and was also a trustee of the museum, to which he was a liberal donor. In 1862, when the British Archaeological Association held its congress at Peterborough, Dr. Walker was the local secretary.

He was a strong Churchman, and was liberal in help for the restoration and preservation of the cathedral of his native city. He was a Freemason, and served as W.M. of the St. Peter's Lodge. In his early days he occasionally hunted with the Fitzwilliam hounds; he also achieved considerable success in amateur theatricals. He was a man of the largest charity, and no appeal for a worthy public purpose or a deserving private case was ever made to him in vain.

In 1865 Dr. Walker married his cousin, a daughter of the Rev. Josiah Walker, Vicar of Wood Ditton, Cambridgeshire. Among thirteen children born to him there are six sons now serving in the royal navy and army. In the early part of last year he lost his wife when they were preparing to celebrate their golden wedding. When he was presented with the freedom of the city he spoke of her with deep feeling as one whose influence over his life for good could not be exaggerated.

DR. FERNAND DUBIEF, deputy for the Saône et Loire, formerly Minister of Commerce, Industry, Posts and Telegraphs, has died at the age of 66. Among the legislative measures due to him was a special tariff of medical fees for accidents to workmen, which became law on October 8th, 1905.

Medical News.

THE Home Office is about to issue new regulations intended to put a stop to the illegitimate traffic in cocaine.

THE President of the Local Government Board has stated that the question whether it is desirable to make leprosy notifiable is under consideration, although the number of cases in this country is extremely small.

DR. SIMSON C. FOWLER, Juniper Green, Midlothian, has been presented by his patients with a gold watch and a cheque, on the occasion of his semi-jubilee, in token of their regard. Mrs. Fowler at the same time received an amethyst and pearl pendant.

THE Paris Academy of Medicine, following the precedents of 1914 and 1915, has decided not to suspend its sittings this year. It will continue to meet during the months of August and September for the discussion of questions relating to public health and national defence.

THE Royal Sanitary Institute has arranged to issue a certificate, after examination, for maternity and child welfare workers. The first examination will be held in London in December. Full particulars can be obtained on application to the Secretary of the Institute, 90, Buckingham Palace Road, London, S.W. Candidates must have obtained a certificate as health visitor, or as inspector of nuisances, granted by the Institute or some other recognized body; must hold an approved midwives certificate, and have had six months' training in a hospital or maternity centre, or have been for a year a health visitor or sanitary inspector.

THE museum of the French army medical service installed at the Val-de-Grâce military hospital under the direction of Professor Jacob, was recently formally opened by M. Justin Godard, Under Secretary of State of the Sanitary Service. On the ground floor are a library, an archives room, and others for specimens, mouldings and apparatus. The first floor is given up to a collection of the instruments of destruction—bullets, shells (incendiary, shrapnel, asphyxiating and explosive gases), aërial torpedoes, Zeppelin and aëroplane bombs—used by the Germans; alongside these are specimens of protective apparatus (helmets and masks). Then comes a miniature exposition of sanitary cantonments, special beds, and other hygienic inventions for use at the front. A laboratory of antityphoid vaccination displays the apparatus, the preparations used, and graphic records. Painted sculptures by M. Jean Larrivé illustrate the working of the sanitary service. A series of reliefs shows first aid in the trenches, the transport of a badly wounded man, the arrival at the first line dressing station, and the interior of the station. A room is set apart for surgical instruments and sterilizing apparatus, with models showing the disinfection of wounds by the Dakin method.

Letters, Notes, and Answers.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra Westrand, London;* telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

DR. X. would be grateful for information as to a suitable high-class home where a young unmarried lady with a persistent sinus leading to the back of sacrum could have a few weeks' heliotherapy.

LETTERS, NOTES, ETC.

D.P.H.LOND. writes to recommend lecithin in the treatment of shell shock and nervous exhaustion. It is, he states, most conveniently administered in capsules containing 3 grains.

OFFICERS R.A.M.C. AND THE "MEDICAL DIRECTORY."

THE editors of the *Medical Directory* write: Medical practitioners now serving in the R.A.M.C. are wondering what address to give for the next issue of the *Medical Directory*. Owing to the fact that their military address is liable to change, and that they may return to civil practice sooner than can at present be expected, we recommend the insertion of the home address only.

FEES OF LOCUMTENENTS.

DR. WM. A. S. ROYDS (Sidcup) writes: In support of the suggestion of Dr. H. Downes (JOURNAL, June 17th, p. 868) to make use of one's fellow practitioners, may I quote a paragraph from an address which I gave when, as long ago as 1879, I had the privilege of being President of the Branch of the Association to which I then belonged?

"Having had the honour of being chosen your representative for the past year on the General Council of the Association, I felt it my duty so far to justify your choice as to make a point of attending the meetings to which I was thus accredited, and owe cordial thanks to many of my professional brethren for assistance kindly offered and willingly given during my absence last year at Bath and this year at a most successful gathering in the South of Ireland."

At that time I seldom took holiday, and distributed a fairly long list amongst the practitioners of the town in which I then worked. As would appear from my appreciation, I had reason to be more than satisfied with the result.

INTRAVENOUS INJECTIONS OF ORGANIC ARSENIC COMPOUNDS.

DR. G. A. H. BARTON (London) writes: The needle for intravenous injection described by Mr. W. F. Cholmeley in the JOURNAL of July 8th, p. 44, is similar to one made to my design in 1912 by Messrs. Allen and Hanburys, and described by me in the discussion on intravenous ether at the meeting of the Association held in Liverpool in that year. Like Mr. Cholmeley, I borrowed the idea from the late Mr. Barker.

GARLIC IN WHOOPING-COUGH.

MR. B. B. GADGIL, M.B., Ch.B.Edin. (Edinburgh) writes: After seeing the interesting communications on the use of garlic in whooping-cough in the BRITISH MEDICAL JOURNAL of July 1st and 15th I feel that I should record my experience of the drug. Having had to go home to India while still a fourth year student I had the opportunity of noting the usefulness of this remedy. One of the children in the house was attacked by the disease, and three other children soon got infected. There was no want of fresh air and amongst the drugs tried were belladonna, antipyrin, dilute hydrocyanic acid, and adrenalin. None of these seemed to do any good, and garlic was suggested. Having failed with the drugs that are usually recommended it was felt that it ought to be given a trial. After three doses had been given the children improved marvellously. The attacks became less frequent and they lasted for a shorter time. In one of the cases—the worst—vomiting used to occur and the sphincters relaxed during the attack. Both these symptoms disappeared after four doses had been administered. The little patients enjoyed undisturbed sleep and all made uneventful recoveries within from one to two weeks. The garlic is peeled and given to the patients boiled in milk. Half an ounce to three-quarters of an ounce was the dose given to a child of 4 years.

TREATMENT OF PNEUMONIA.

DR. ARTHUR J. MATHISON (Hornsey, N.) writes: Dr. J. Watkin Edwards, in your issue of July 22nd, p. 97, gave an arresting picture of the ravages of industrial diseases in Middlesbrough, and, in dealing with the treatment of pneumonia, related that in alcoholic cases he had obtained good results from a mixture of potassium iodide and creosote, without stating the proportions of these drugs in the mixture and the dose of the resulting combination. If the mixture is identical with that I have been recommending with some success for a considerable time, may I point out that the heavy mortality from pneumonia in the male population of Middlesbrough might vanish, or almost vanish, if the mixture were used in all cases of the disease? In cases secondary to Bright's disease the mixture should be discontinued as soon as possible, and the primary disease again treated.

INFLAMMABLE STOMACH GAS.

DR. W. F. A. CLOWES (Colchester) sends a note on the case of a man, aged 42, who stated he had for years suffered from indigestion accompanied by flatulence. On the morning of the day he consulted Dr. Clowes the patient had eaten an egg and bread-and-butter for breakfast. He was about to light his pipe, as was his custom after meals, when he belched up a large quantity of gas, which caught fire, giving a bluish flame, and burning his lips and one side of his moustache. The lip was quite blistered and a great part of the moustache burnt off. The occurrence was witnessed by his assistant. The patient said that this was the third time this "accident" had happened.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
Each additional line	0	0	8
A whole column	3	10	0
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An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.